

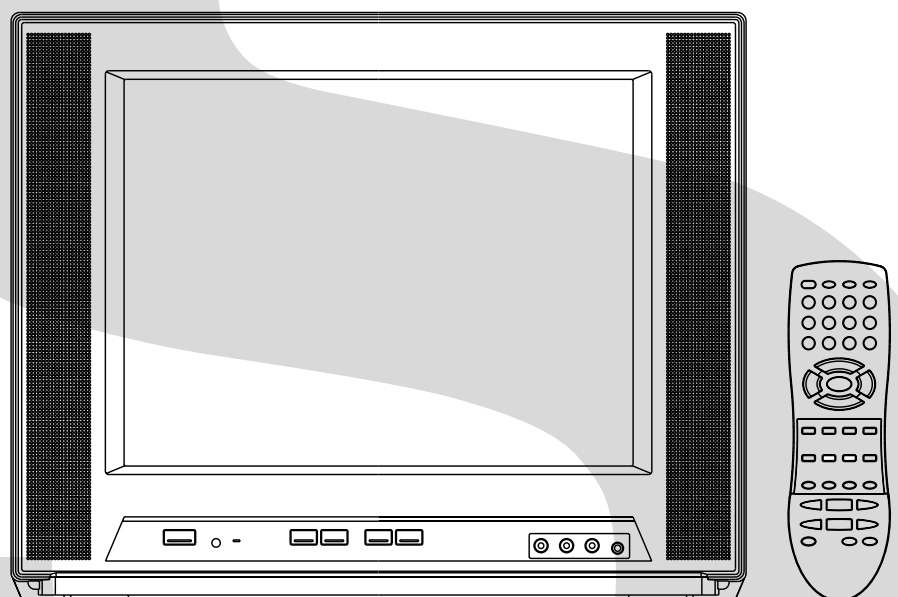
TOSHIBA

FILE NO. 050-200202

SERVICE MANUAL

COLOR TELEVISION

14AF42



SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES


As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not to modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.

When replacing an IC's or transistors, use only specified silicon grease (YG6260M).

Remove all old silicon before applying new silicon.

GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	14 inch / 357mmV	
			CRT Type	Flat	
			Deflection	90 degree	
			Magnetic Field BV/BH	+0.45G/0.18G	
			Color System	NTSC	
			Speaker	2 Speaker	
				Position	Front Side
				Size	1.6 x 2.8 Inch
				Impedance	8 ohm
			Sound Output	MAX	2.5+2.5 W
				10%(Typical)	2.0+2.0 W
		NTSC3.58+4.43 /PAL60Hz	No		
G-2	Tuning System	Broadcasting System		US System M	
		Tuner and Receive CH	System	1Tuner	
			Destination	Others	
			Tuning System	F-Synth	
			Input Impedance	VHF/UHF 75 ohm	
				2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84	
			CH Coverage		
			Intermediate Frequency	Picture(FP)	45.75MHz
				Sound(FS)	41.25MHz
				FP-FS	4.50MHz
			Preset CH		No
	Stereo/Dual TV Sound		Yes		
	Tuner Sound Muting		Yes		
G-3	Power	Power Source	AC	120V AC 60Hz	
			DC		
		Power Consumption		at AC	
			Stand by (at AC)		80 W at AC 120 V 60 Hz
		Per Year	4 W at AC 120 V 60 Hz		
			-- kWh/Year		
	Protector	Power Fuse		Yes	
G-4	Regulation	Safety		CSA	
		Radiation		IC	
		X-Radiation		WHC	
G-5	Temperature	Operation		+5oC ~ +40oC	
		Storage		-20oC ~ +60oC	
G-6	Operating Humidity			Less then 80% RH	
G-7	On Screen Display	Menu		Yes	
		Menu Type		Icon	
		Picture		Yes	
			Contrast		Yes
			Brightness		Yes
			Color		Yes
			Tint		Yes
			Sharpness		Yes
			Audio		Yes
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Stable Sound On/Off	Yes
			Set Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
			Option		Yes
				Language	Yes
				CH Label	Yes
				Favorite CH	Yes
				V-Chip	No
				Lock	Yes
				Color Stream DVD/DTV	Yes
			Control Level		Yes
				Volume	Yes
				Brightness	Yes
				Contrast	Yes
				Color	Yes
				Tint (NTSC Only)	Yes
				Sharpness	Yes
				Tuning	No
				Bass	Yes
				Treble	Yes
				Balance	Yes
				Back Light	No
				Stereo,Audio Output,SAP	Yes
				Video	Yes
				Color Stream	Yes
				Channel(TV/Cable)	Yes
				CH Label	Yes
		Game Timer	Yes		
		Sleep Timer	Yes		
		Sound Mute	Yes		
		V-chip Rating	No		

GENERAL SPECIFICATIONS

G-8	OSD Language	OSD Language Setting	English French Spanish	
G-9	Clock and Timer	Sleep Timer	English	
		Max Time	120 Min	
		Step	<u> 10 </u> Min	
		On/Off Timer	<u> No </u>	
		Program(On Tim / Off Tim)	<u> No </u>	
		Wake Up Timer	<u> No </u>	
		Timer Back-up (at Power Off Mode) more than	<u> -- </u> Min Sec	
G-10	Remote Control	Unit	RC-DU	
		Glow in Dark Remocon	Yes	
		Format	Toshiba	
		Custom Code	TV:40-BFh	
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		<u> 42 </u> Keys
		Keys	Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			100	Yes
			CH Up/+	Yes
			CH Down/-	Yes
			Volume Up/+	Yes
			Volume Down/-	Yes
			C.C.(TV/Caption/Text)	Yes
			CH1/CH2	Yes
			TV/Video(Input Select)	Yes
			CH RTN(Quick View)	Yes
			SLEEP	Yes
			RECALL(Call)	Yes
			Reset	Yes
			Menu/Enter	Yes
			Mute	Yes
			Exit	Yes
			MTS(Audio Select)	Yes
			Fav. Up	Yes
			Fav. Down	Yes
			CH Up(VCR)	Yes
			CH Down(VCR)	Yes
			Pause/Still	Yes
			TV/VCR(VCR)	Yes
			FF	Yes
			Rew	Yes
	Rec	Yes		
	Play	Yes		
	Stop	Yes		
	TV	Yes		
	VCR	Yes		
	Cable	Yes		
	CODE	Yes		
	Multi Brand Keys			

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes		
		Auto Shut Off	Yes		
		Canal+	No		
		CATV	Yes		
		Anti-theft	No		
		Rental	No		
		Memory(Last CH)	Yes		
		Memory(Last Volume)	Yes		
		V-Chip	No		
		Type	-- Type		
		BBE	No		
		Auto Search	No		
		CH Allocation	No		
		SAP	Yes		
		Just Clock Function	No		
		CH Label	Yes		
		VM Circuit	No		
		Full OSD	No		
		Premiere	No		
		Comb Filter	Yes 3 Lines		
		Auto CH Memory	Yes		
		Hotel Lock	No		
		Closed Caption	Yes		
		Stable Sound	Yes		
		FBT Leak Test Protect	Yes		
		CH Lock	Yes		
		Video Lock	Yes		
		Game Timer	Yes		
		Energy Star	No		
		Favorite CH	Yes		
		G-12	Accessories	Owner's Manual	Language W/ Warranty
					English / French No
Remote Control Unit	Yes				
Rod Antenna	No				
	Poles Terminal				
Loop Antenna	No				
	Terminal				
	-				
U/V Mixer	No				
DC Car Cord (Center+)	No				
Guarantee Card	No				
Warning Sheet	No				
Circuit Diagram	No				
Antenna Change Plug	No				
Service Station List	Yes				
Important Safety Instructions	Yes				
Dew/AHC Caution Sheet	No				
AC Plug Adapter	No				
Quick Set-up Sheet	No				
Battery	Yes				
	UM size x pcs OEM Brand				
	UM-4 x 2 No				
AC Cord	No				
AV Cord (2Pin-1Pin)	No				
Registration Card (NDL Card)	Yes				
Envelope	Yes				
ESP Card	No				
300 ohm to 75 ohm Antenna Adapter	No				

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
		Volume Down	Yes		
		Rear	AC/DC	No	
			TV/CATV Selector	No	
			Degauss	No	
			Main Power SW	No	
		Indicator	Power	Yes(RED)	
			Stand-by	No	
			On Timer	No	
		Terminals	Front	Video Input = VIDEO3	RCA
				Audio Input = VIDEO3	RCA x 2
				Other Terminal	Head Phone
			Rear	Video Input(Rear1) = VIDEO1	RCA
				Video Input(Rear2) = VIDEO2	RCA
				Audio Input(Rear1) = VIDEO1	RCA x 2
				Audio Input(Rear2) = VIDEO2	RCA x 2
				Video Output	RCA
				Audio Output	RCA x 2
Euro Scart	No				
Color Stream	RCA x 3				
S Input	Yes				
Diversity	No				
Ext Speaker	No				
DC Jack 12V(Center +)	No				
VHF/UHF Antenna Input	F Type				
AC Outlet	No				
G-14	Set Size	Approx. W x D x H (mm)		<u>432 x 386 x 344.5</u>	
G-15	Weight	Net (Approx.)		<u>11.0kg (24.3 lbs)</u>	
		Gross (Approx.)		<u>13.0 kg (28.7 lbs)</u>	
G-16	Carton	Master Carton		No	
		Content		---- Sets	
		Material		-- /--	
		Dimensions W x D x H(mm)		-- x -- x --	
		Description of Origin		--	
		Gift Box		Yes	
		Material		Double/Brown	
		Dimensions W x D x H(mm)		<u>515 x 460 x 435</u>	
		Design		As per Buyer's	
		Description of Origin		Yes	
		Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces	
Height (cm)		62			
Container Stuffing		575 Sets/40' container			
G-17	Cabinet Material	Cabinet Front	PS 94V0 DECABROM		
		Cabinet Rear	PS 94V0 DECABROM		

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.

A cracking noise will be heard as the voltage is discharged.

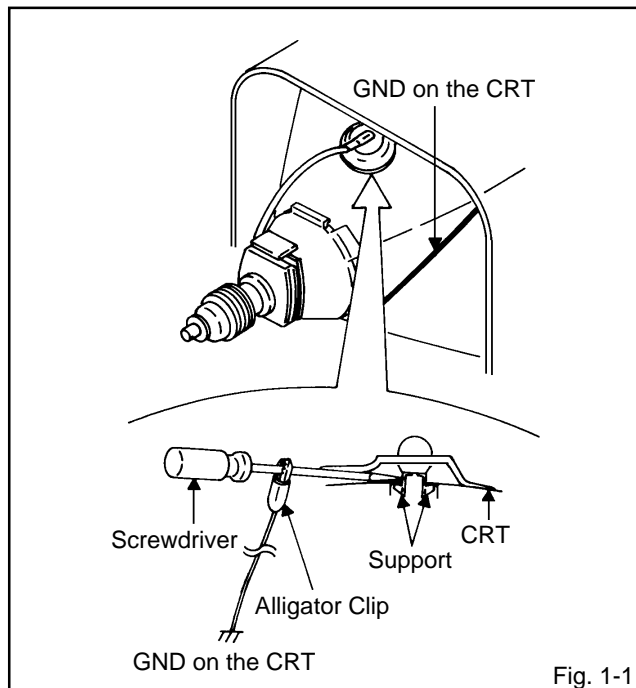


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

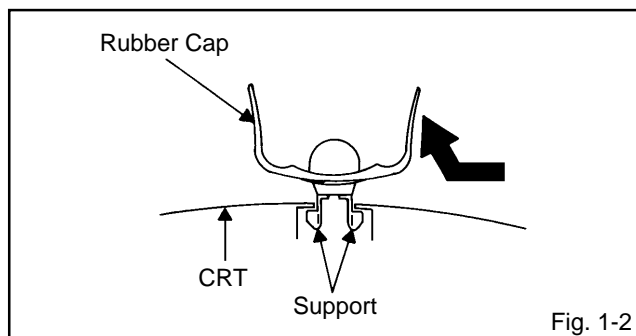


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

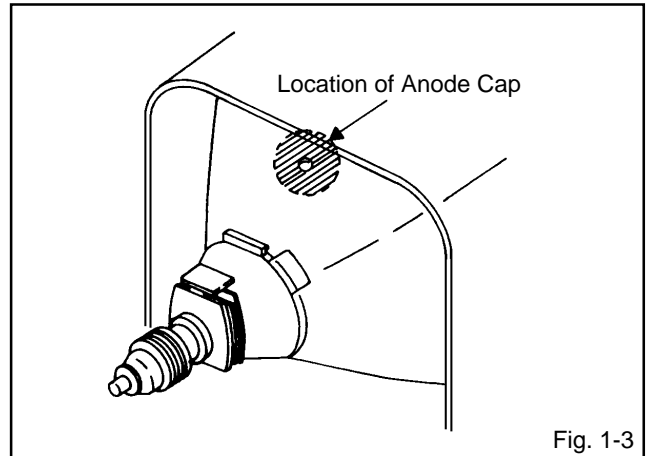


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

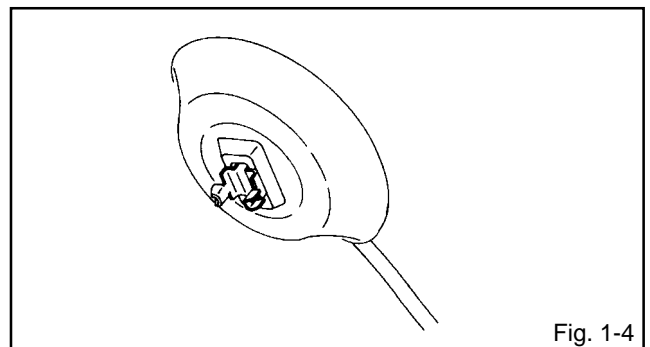


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.

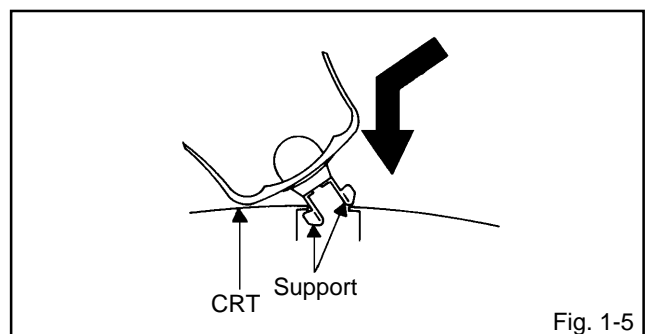


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

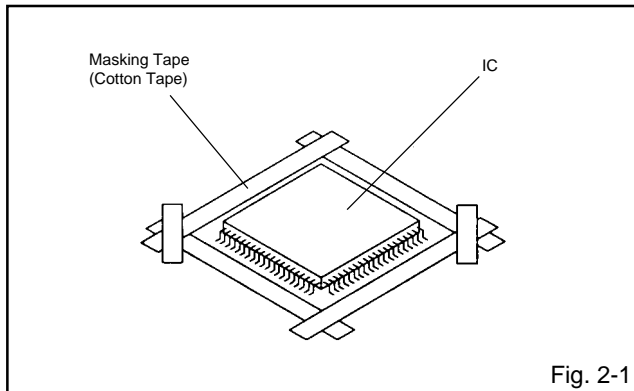
2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

NOTE

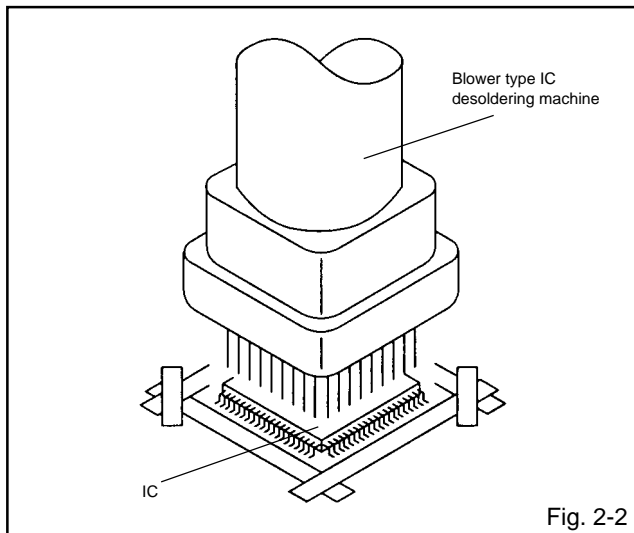
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

NOTE

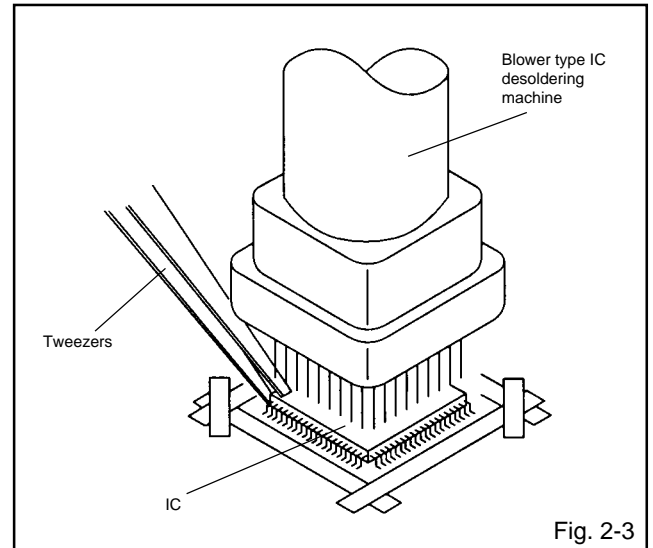
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

NOTE

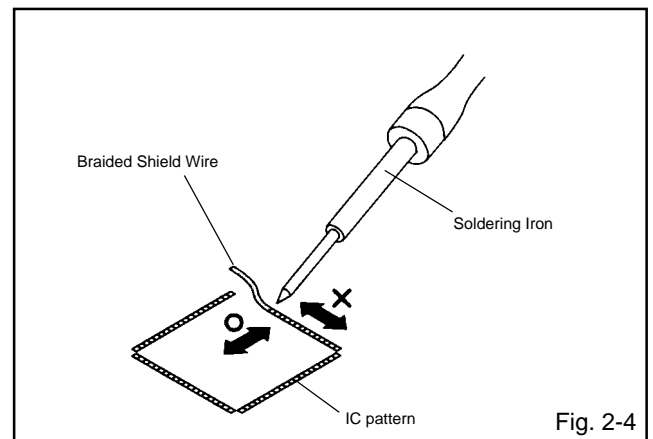
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

NOTE

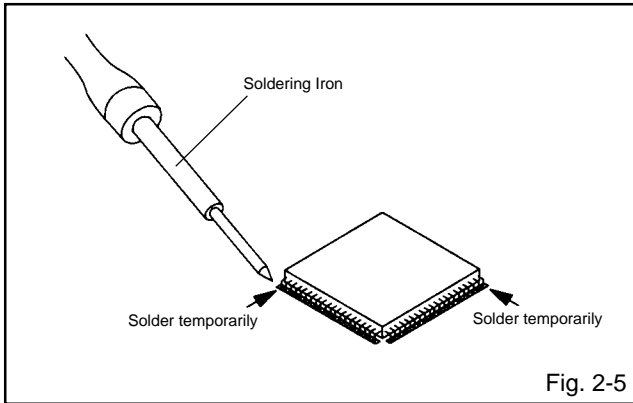
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



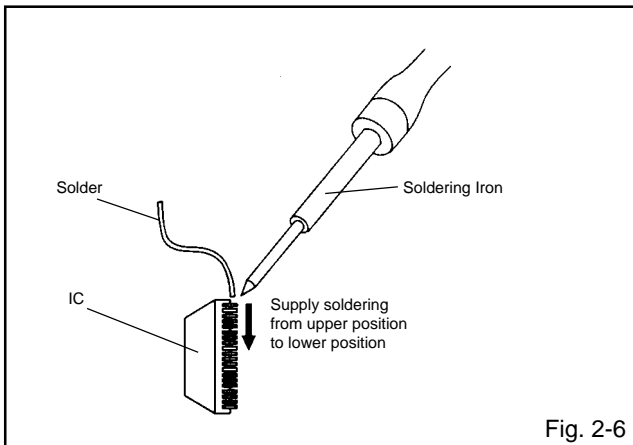
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**



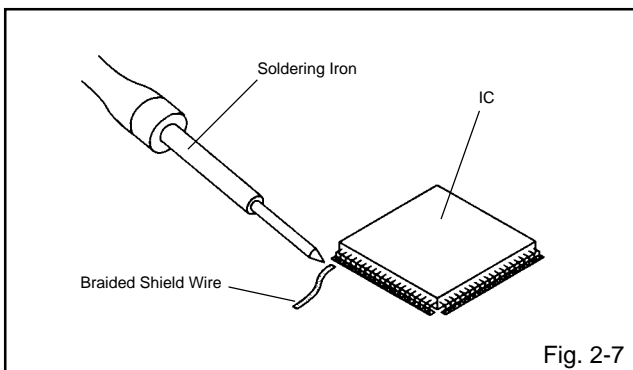
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**



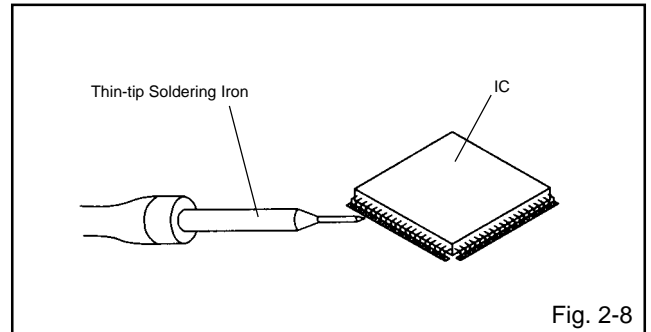
3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily. To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

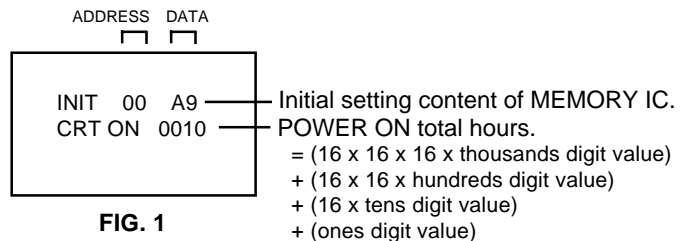


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	A9	C3	CF	00	31	B3	27	36	(*1)	00	44	04	00	00	00	56
10	40	00	00	00	00	00	00	00	00	00	00	00	0F	A7	41	1F
20	61	62	63	64	66	68	29	69	6A	6B	6C	6D	6E	6F	50	70
30	51	71	52	72	53	73	73	54	54	74	74	55	55	75	75	56
40	56	76	76	57	57	77	77	58	58	78	78	59	59	79	79	5A
50	5A	7A	7A	5B	5B	7B	7B	5C	5C	7C	7C	7C	5D	5D	5D	5D

(*1)

	Data
For USA	3B
For CANADA	3A

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button (9) on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in Fig. 1-1.

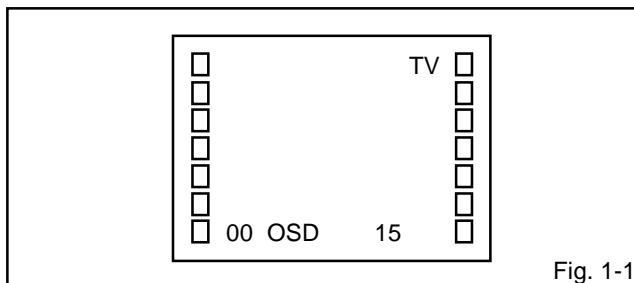


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in Fig. 1-2.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	21	BRI.MAX
01	CUT OFF	22	BRI.MIN
02	RF.AGC	23	COL.MAX
03	---	24	COL.CENT
04	H.POSI	25	COL.MIN
05	V.POSI	26	TINT
06	H.SIZE	27	SHARPNESS
07	V.SIZE	28	RGB CONTRAST
08	V.CENT	29	PARABORA
09	V.LIN	30	TRAPEZIU
10	VS CORR	31	COR TOP
11	G.DRV	32	COR BTM
12	B.DRV	33	V EHT
13	R.BIAS	34	H EHT
14	G.BIAS	35	FM.LVL
15	B.BIAS	36	LEVEL
16	BRI.CENT	37	SEP 1
17	SUB CONT	38	SEP 2
18	CONT.MAX	39	T.STE
19	CONT.CENT	40	X-RAY
20	CONT.MIN	88	READ DATA

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Connect the digital voltmeter to TP002.
3. Adjust the VR502 until the digital voltmeter is $115 \pm 1V$.

2-2: RF AGC

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the VHF HIGH (63dB).
3. Connect the digital voltmeter between the pin 5 of CP101 and the GND.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (02) on the remote control to select "RF.AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is $2.5 \pm 0.05V$.

2-3: CUT OFF

1. Adjust the unit to the following settings.
G. DRIVE =64, B. DRIVE=64, R. BIAS=64, G. BIAS=64, B. BIAS=64.
2. Place the set with Aging Test for more than 15 minutes.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (01) on the remote control to select "CUT OFF".
4. Adjust the Screen Volume until a dim raster is obtained.

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (13) on the remote control to select "R.BIAS".
5. Press the CH. UP/DOWN button on the remote control to select the "R.BIAS", "G.BIAS", "B.BIAS", "B DRIVE" or "G DRIVE".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R.BIAS, G.BIAS, B.BIAS, B DRIVE, and G DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-5: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the Focus Volume until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (04) on the remote control to select "H.POSI".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

ELECTRICAL ADJUSTMENTS

2-7: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "V.POSI".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

2-8: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V.SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes $10 \pm 2\%$.

2-9: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-8. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "V.LIN".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-10: BRIGHTNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "BRI.CENT".
2. Press the VOL. UP/DOWN button on the remote control until the brightness step No. becomes "66".
3. Receive a broadcast and check if the picture is normal.
4. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.
5. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 1~3.

2-11: TINT/COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP806**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line **(Refer to Fig. 2-1)**.
6. Connect the oscilloscope to **TP805**.
7. Press the CH DOWN button 2 times to set to "COL.CENT" mode.
8. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4.4 scales on the screen of the oscilloscope.
9. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $115 \pm 10\%$ of the white level. **(Refer to Fig. 2-2)**
10. Receive the color bar pattern. (Audio Video Input)
11. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~9.
12. Press the TV/VIDEO button on the remote control to set to the CS mode.
13. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TINT".
14. Press the VOL. UP/DOWN button on the remote control until the tint step No. becomes "52".
15. Press the CH DOWN button 2 times to set to "COL.CENT" mode.
16. Press the VOL. UP/DOWN button on the remote control until the color step No. becomes "71".

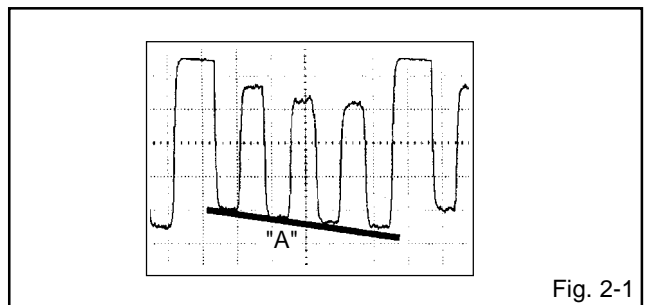


Fig. 2-1

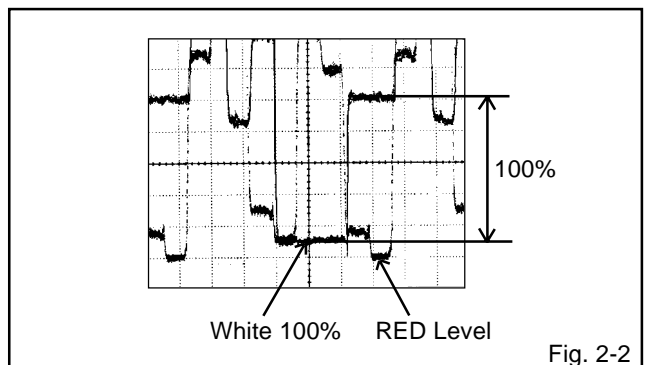


Fig. 2-2

ELECTRICAL ADJUSTMENTS

2-12: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (Refer to **Fig. 2-3**)

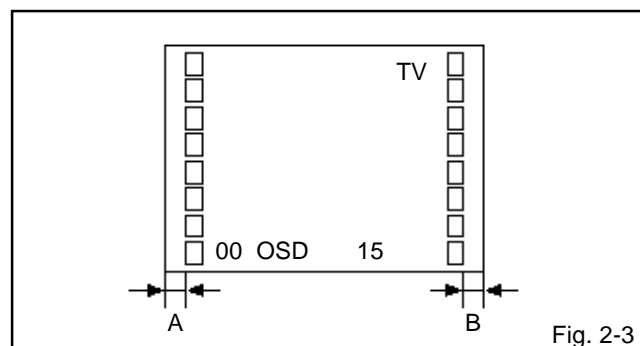


Fig. 2-3

2-13: SEPARATION 1, 2

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (37) on the remote control to select "SEP 1".
4. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
5. Press the CH UP button once the set to "SEP 2" mode. Then perform the above adjustment 4.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch=Non input and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (37) on the remote control to select "SEP 1".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF.
7. Connect the oscilloscope to the **Audio Out Jack (L-ch)**.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (38) on the remote control to select "SEP 2".
9. Press the VOL. UP/DOWN button on the remote control to adjust it until the L-ch output becomes minimum.

2-14: CONTRAST MAX MANUAL

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (18) on the remote control to select "CONT MAX".
4. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "77".
5. Receive a broadcast and check if the picture is normal.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2-5.
8. Press the TV/VIDEO button on the remote control to set to the CS mode.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (18) on the remote control to select "CONT MAX".
10. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "52".
11. Receive a broadcast and check if the picture is normal.

2-15: LEVEL

1. Receive the monoscope pattern (70dB).
2. Connect the AC voltmeter to **pin 3 of J708**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (36) on the remote control to select "LEVEL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is $75 \pm 2\text{mV}$.

2-16: Confirmation of Fixed Value (step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV	CS
06	H SIZE	00	00	00
08	V CENT	25	25	25
10	VS CORR	10	10	10
17	SUB CONT	15	15	12
19	CONT CENT	40	40	40
20	CONT MIN	10	10	10
21	BRI MAX	88	88	88
22	BRI MIN	32	32	32
23	COL MAX	100	100	100
25	COL MIN	00	00	00
27	SHARP	30	30	30
28	RGB CONTRAST	25	25	25
29	PARABOLA	00	00	00
30	TRAPEZIU	00	00	00
31	COR TOP	00	00	00
32	COR BTM	00	00	00
33	V EHT	00	00	00
34	H EHT	00	00	00
35	FM LEVEL	01	01	01
39	T.STE	00	00	00

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

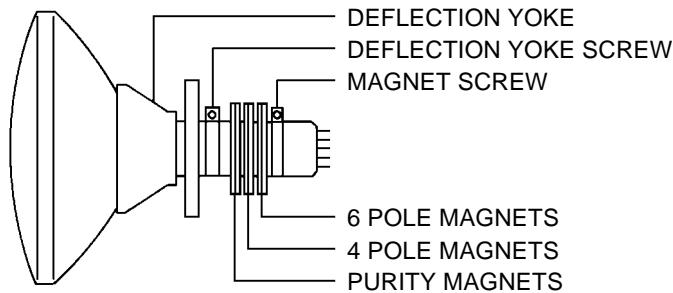


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

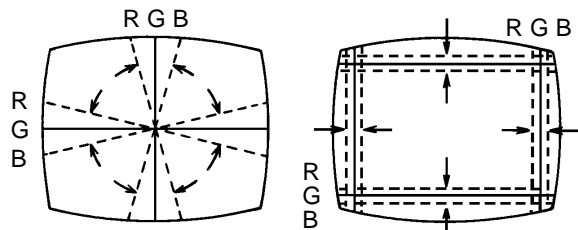
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

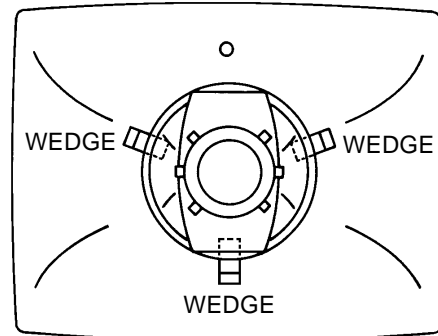
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

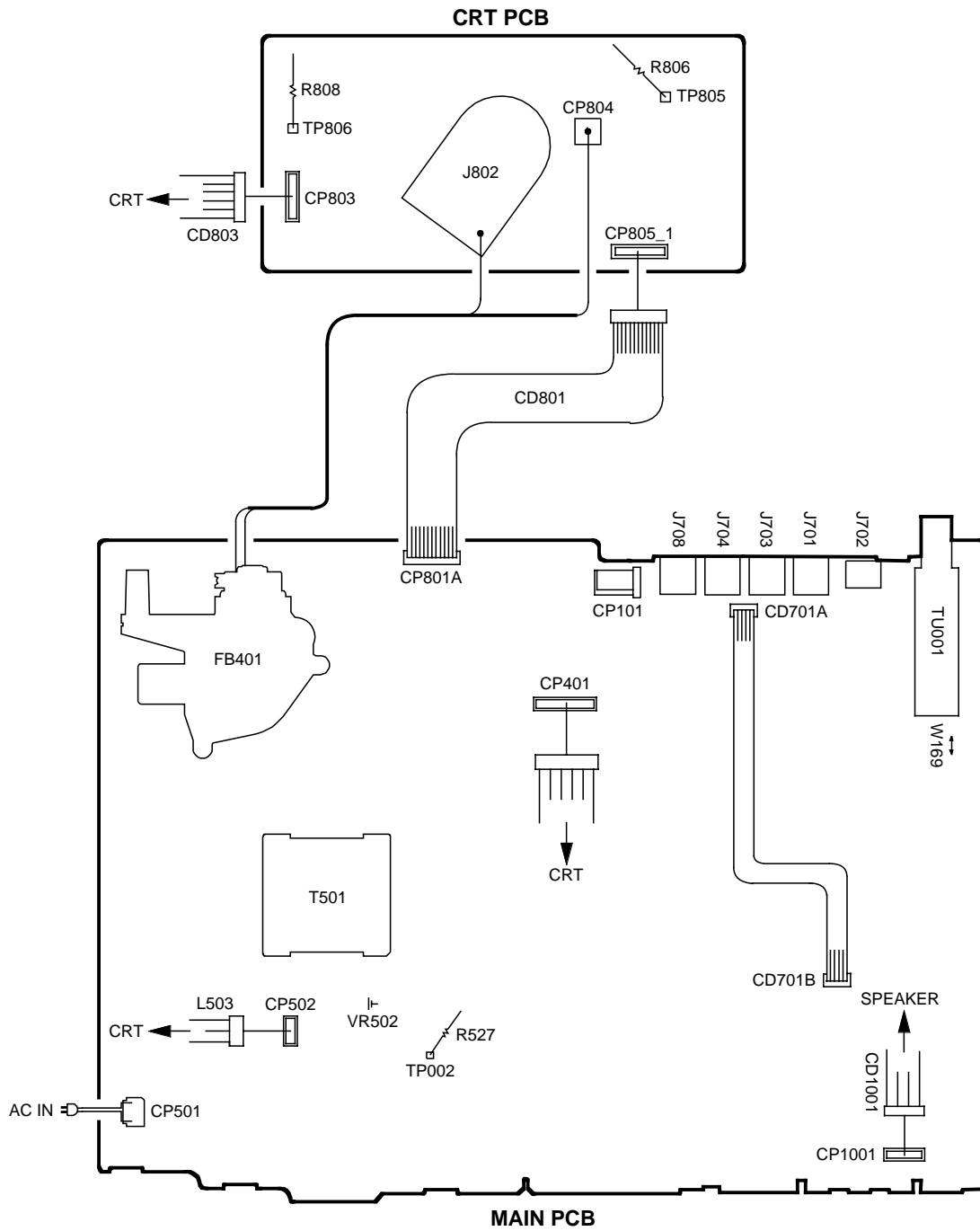


WEDGE POSITION

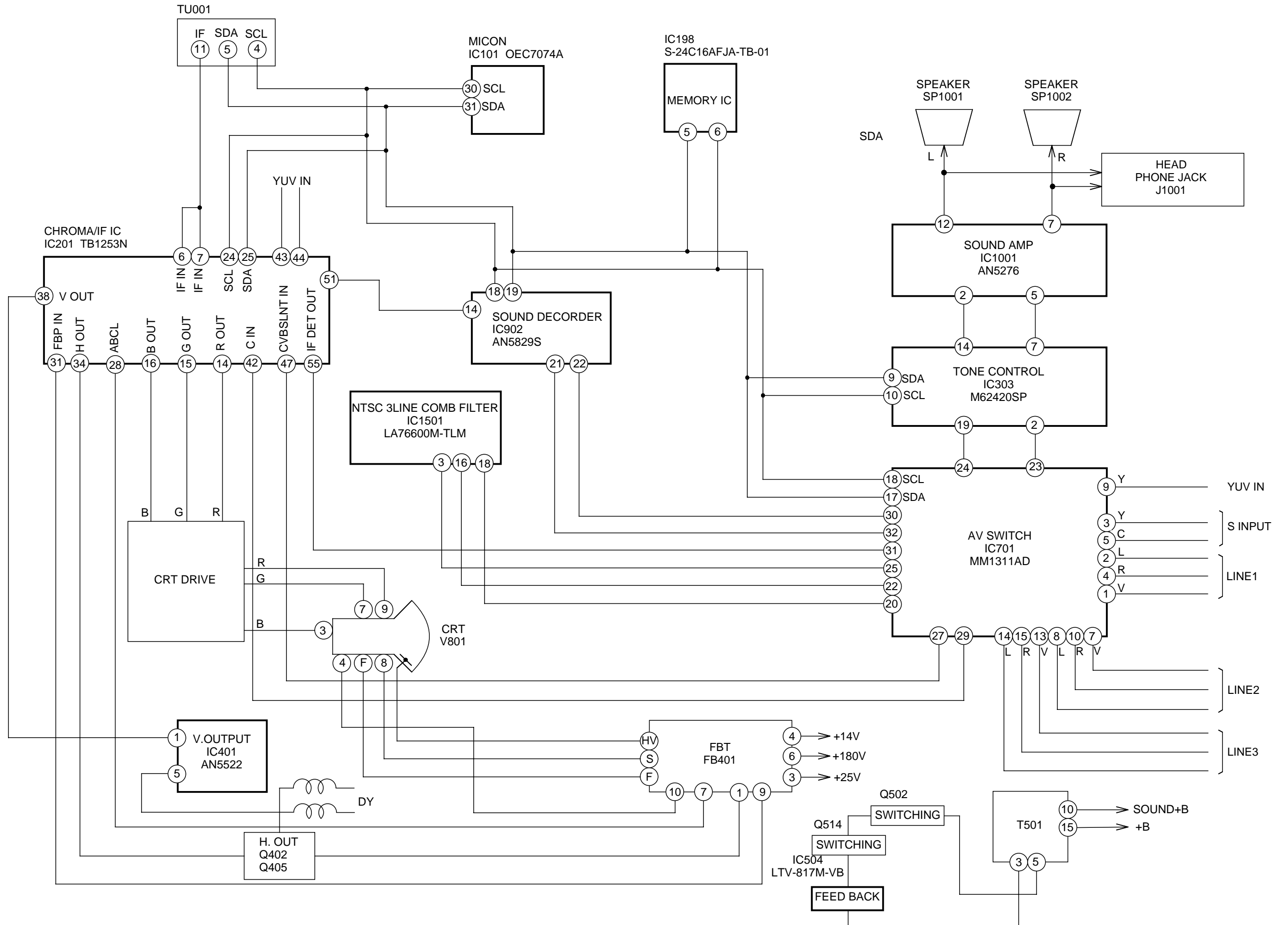
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

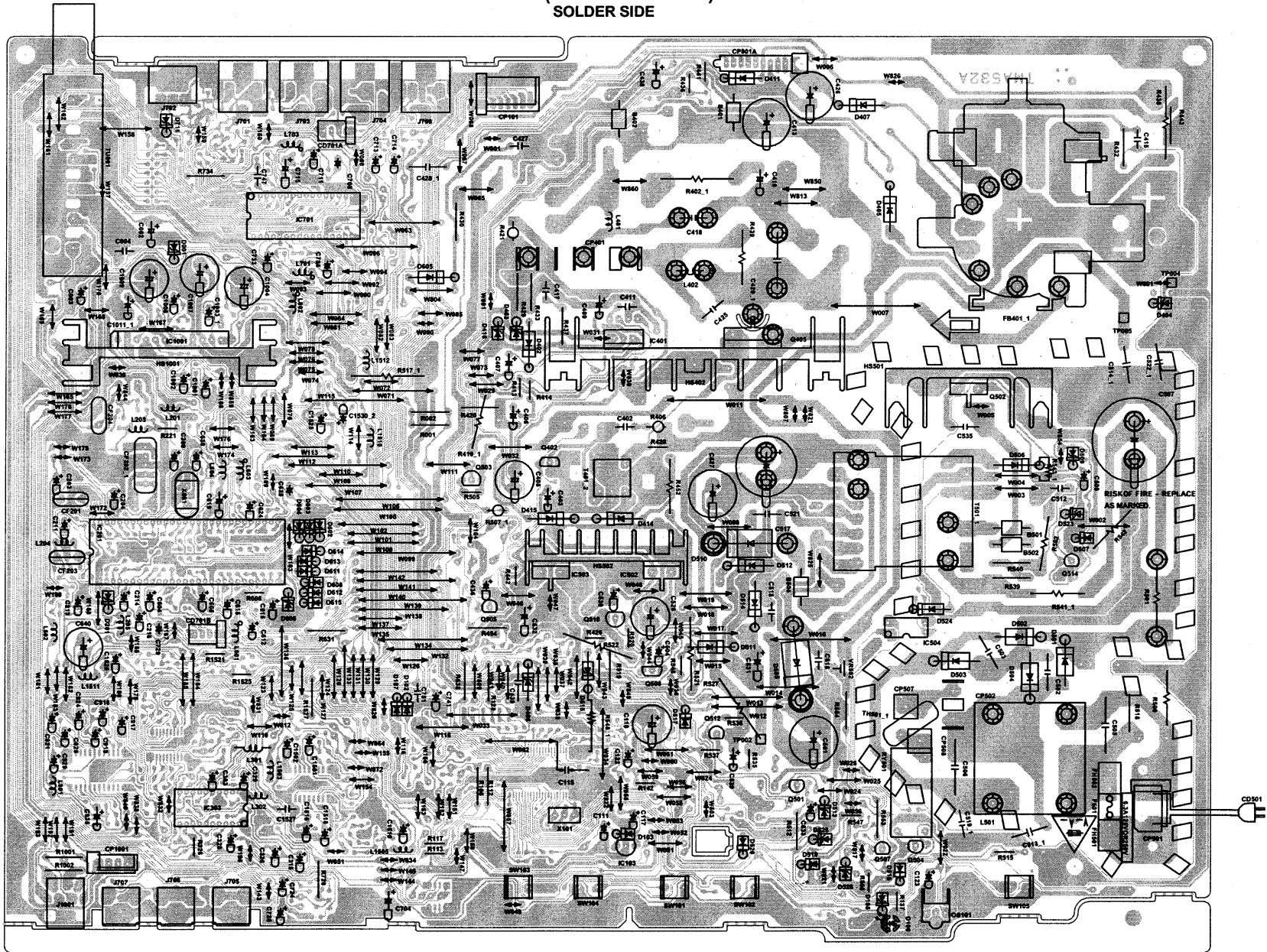
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



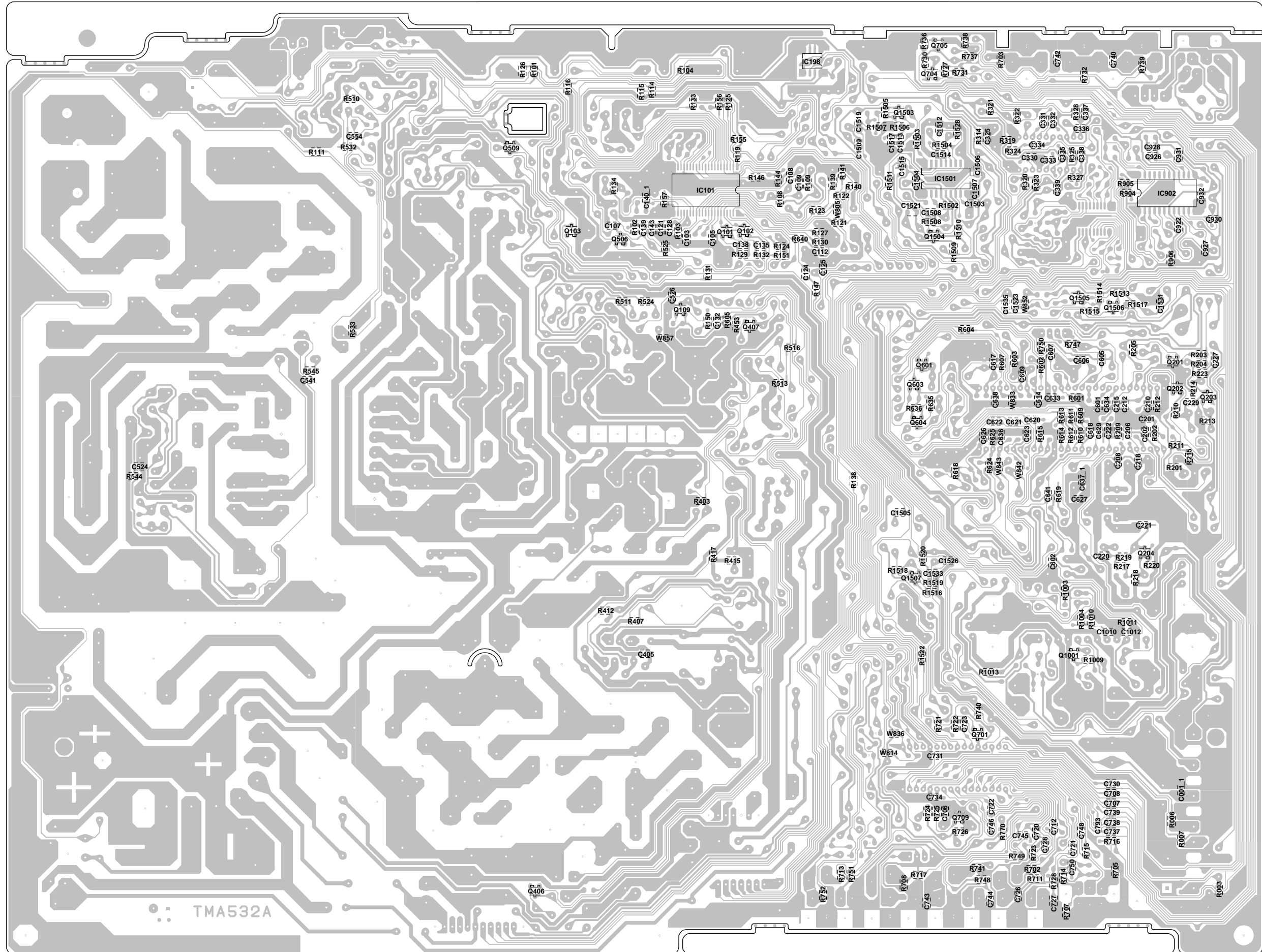
BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS
MAIN (INSERTED PARTS)
SOLDER SIDE



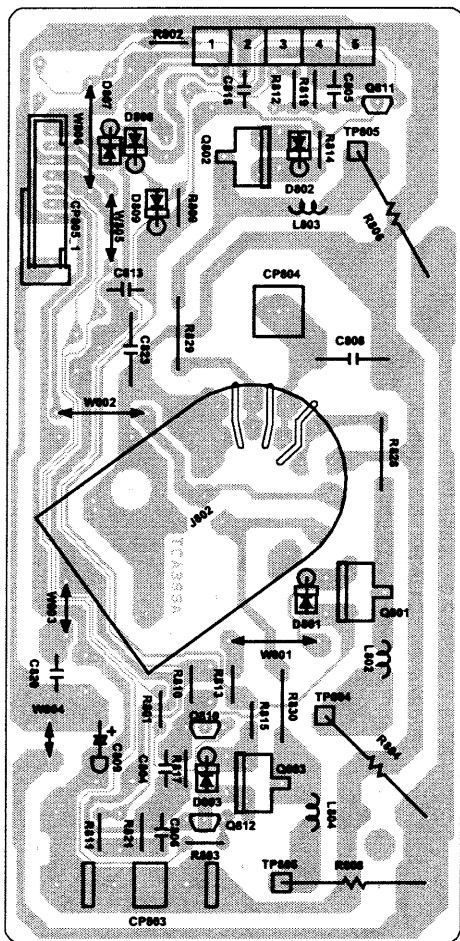
PRINTED CIRCUIT BOARDS
MAIN (CHIP MOUNTED PARTS)
SOLDER SIDE



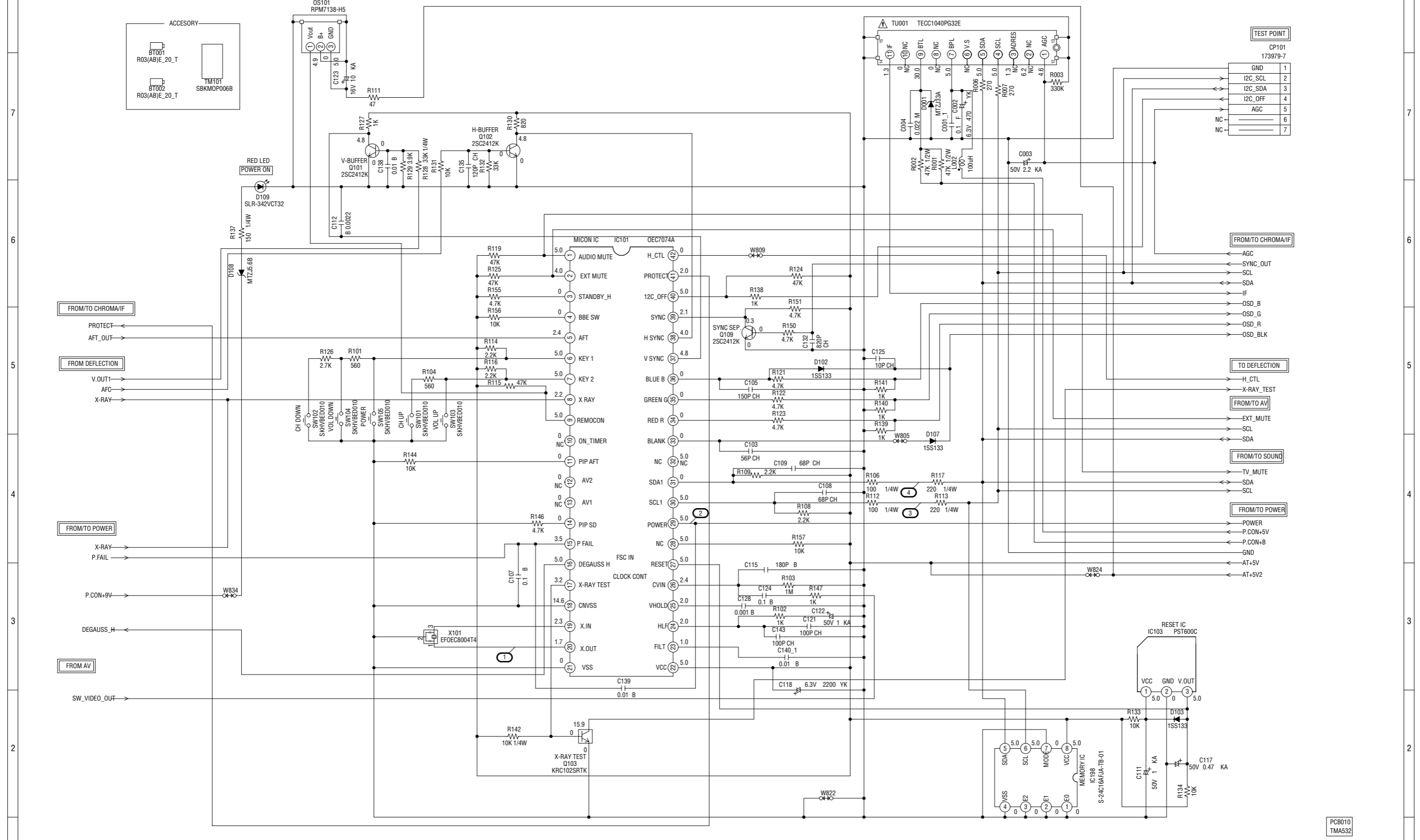
PRINTED CIRCUIT BOARDS

CRT

SOLDER SIDE



MICON/TUNER SCHEMATIC DIAGRAM (MAIN PCB)



TEST POINT

CP101	1
173979-7	2
I2C_SCL	3
I2C_SDA	4
I2C_OFF	5
AGC	6
NC	7

FROM/TO CHROMA/IF

FROM DEFLECTION

FROM/TO POWER

FROM AV

FROM/TO CHROMA/IF

TO DEFLECTION

FROM/TO AV

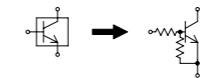
FROM/TO SOUND

FROM/TO POWER

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

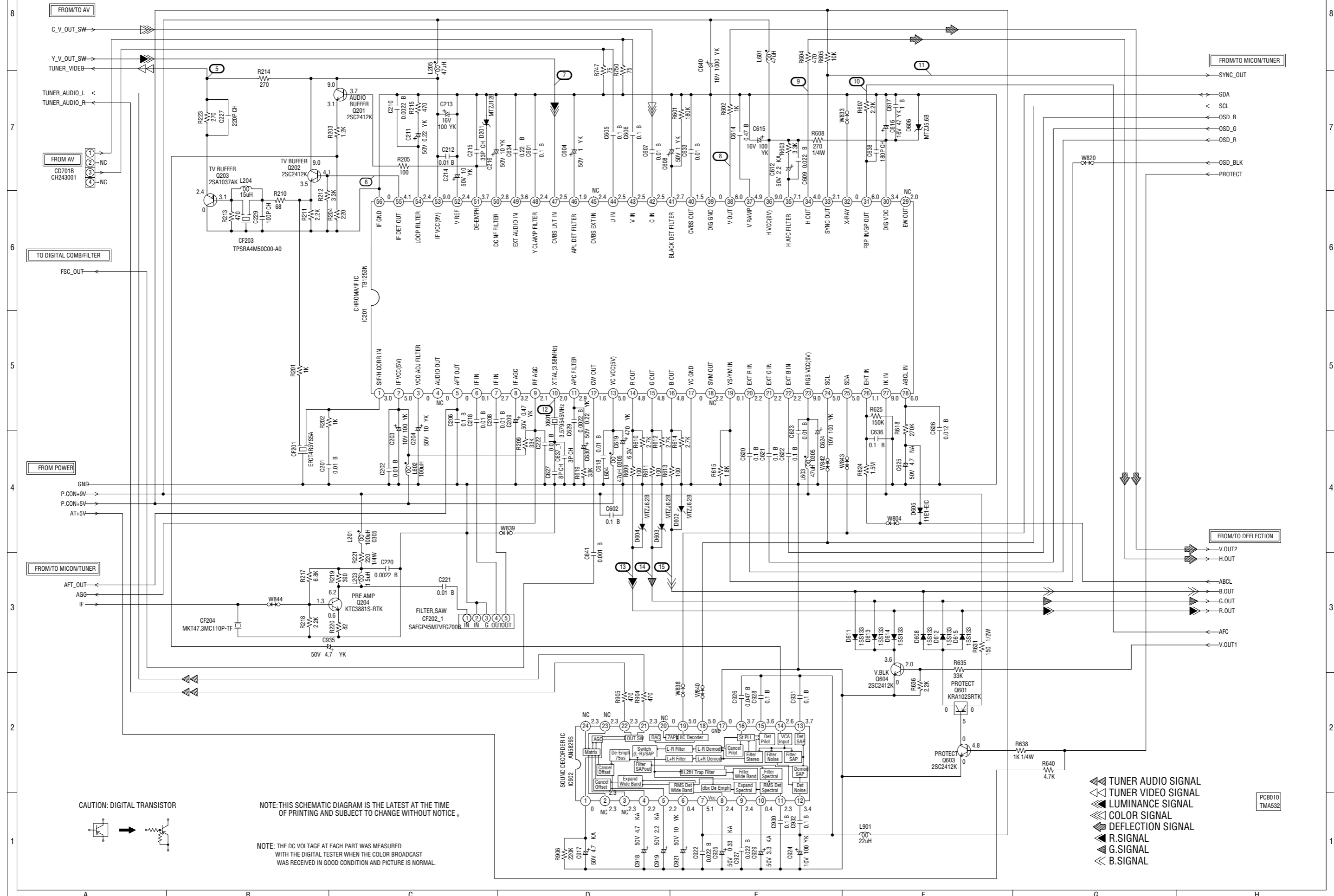
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

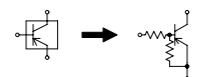


PCB010
TMA532

CHROMA/IF SCHEMATIC DIAGRAM (MAIN PCB)



CAUTION: DIGITAL TRANSISTOR



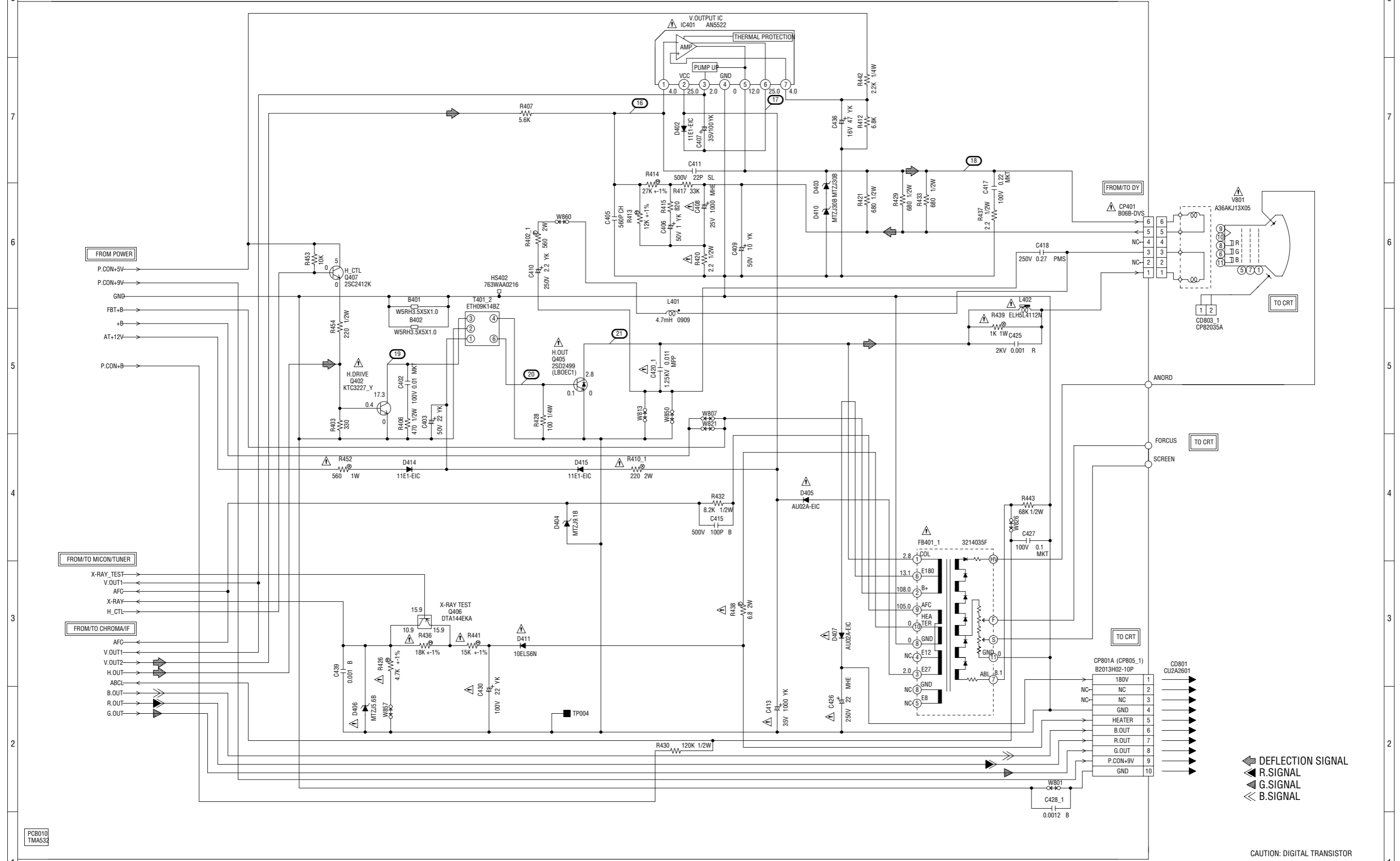
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

- ▶ TUNER AUDIO SIGNAL
- ▶ TUNER VIDEO SIGNAL
- ▶ LUMINANCE SIGNAL
- ▶ COLOR SIGNAL
- ▶ DEFLECTION SIGNAL
- ▶ R.SIGNAL
- ▶ G.SIGNAL
- ▶ B.SIGNAL

PCB010
TMA532

DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

CAUTION: DIGITAL TRANSISTOR

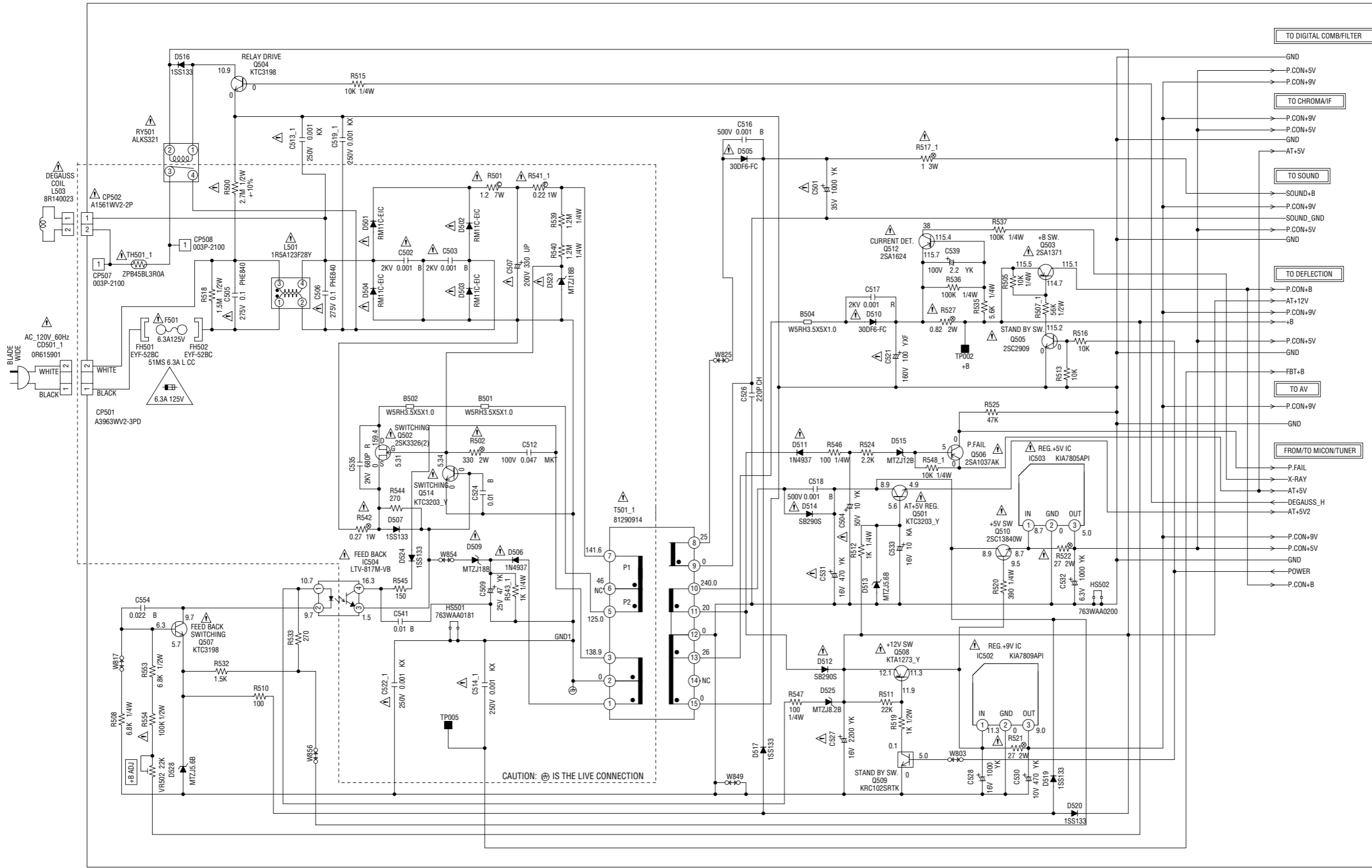
PC8010
TMA534

POWER SCHEMATIC DIAGRAM (MAIN PCB)



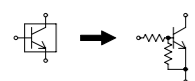
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE
6.3A 125V(F501)

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE
N'UTILISER QUE DES FUSIBLE DE MEME TYPE
6.3A 125V(F501)



PCB010
TMA532

CAUTION: DIGITAL TRANSISTOR



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

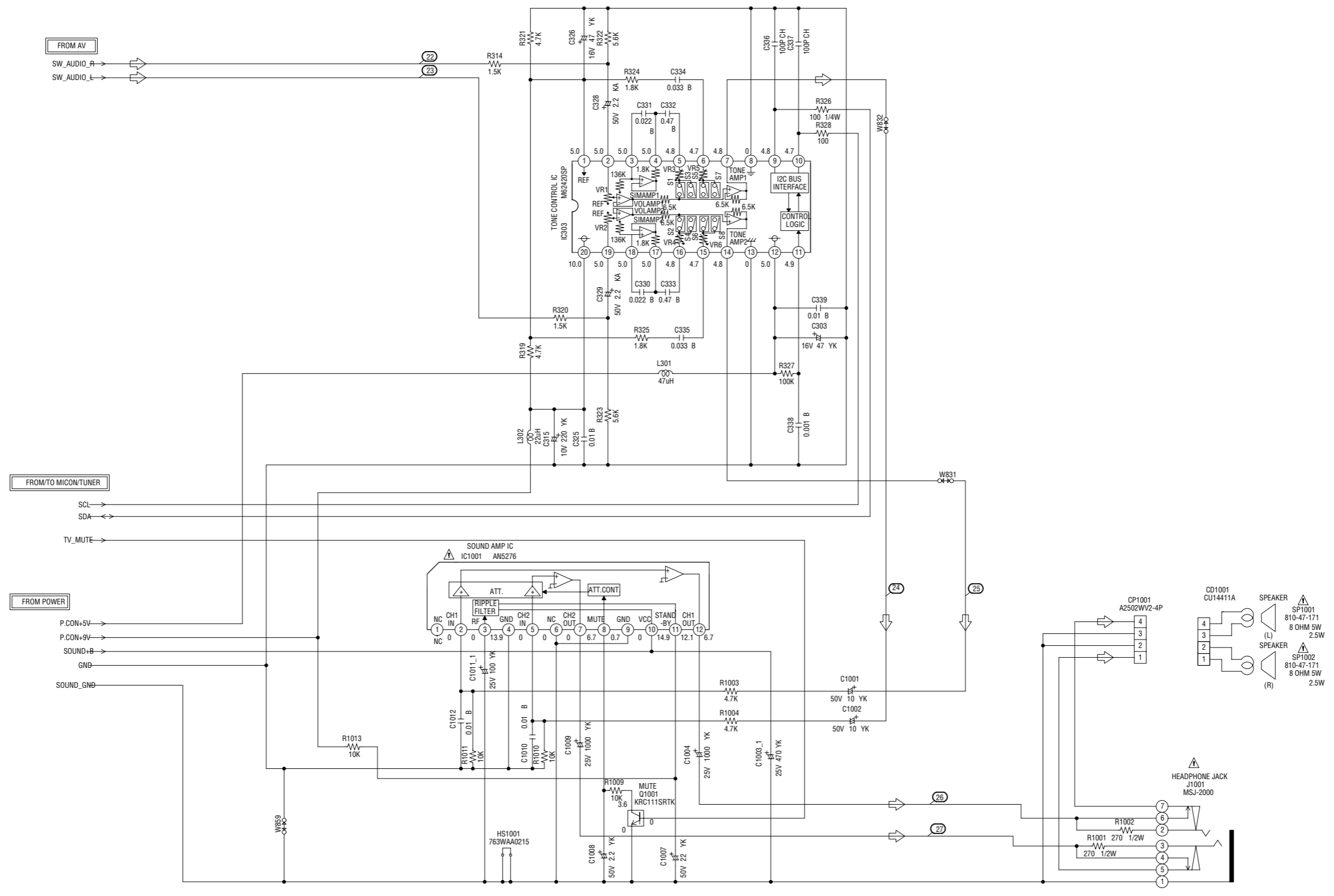
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

SOUND SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

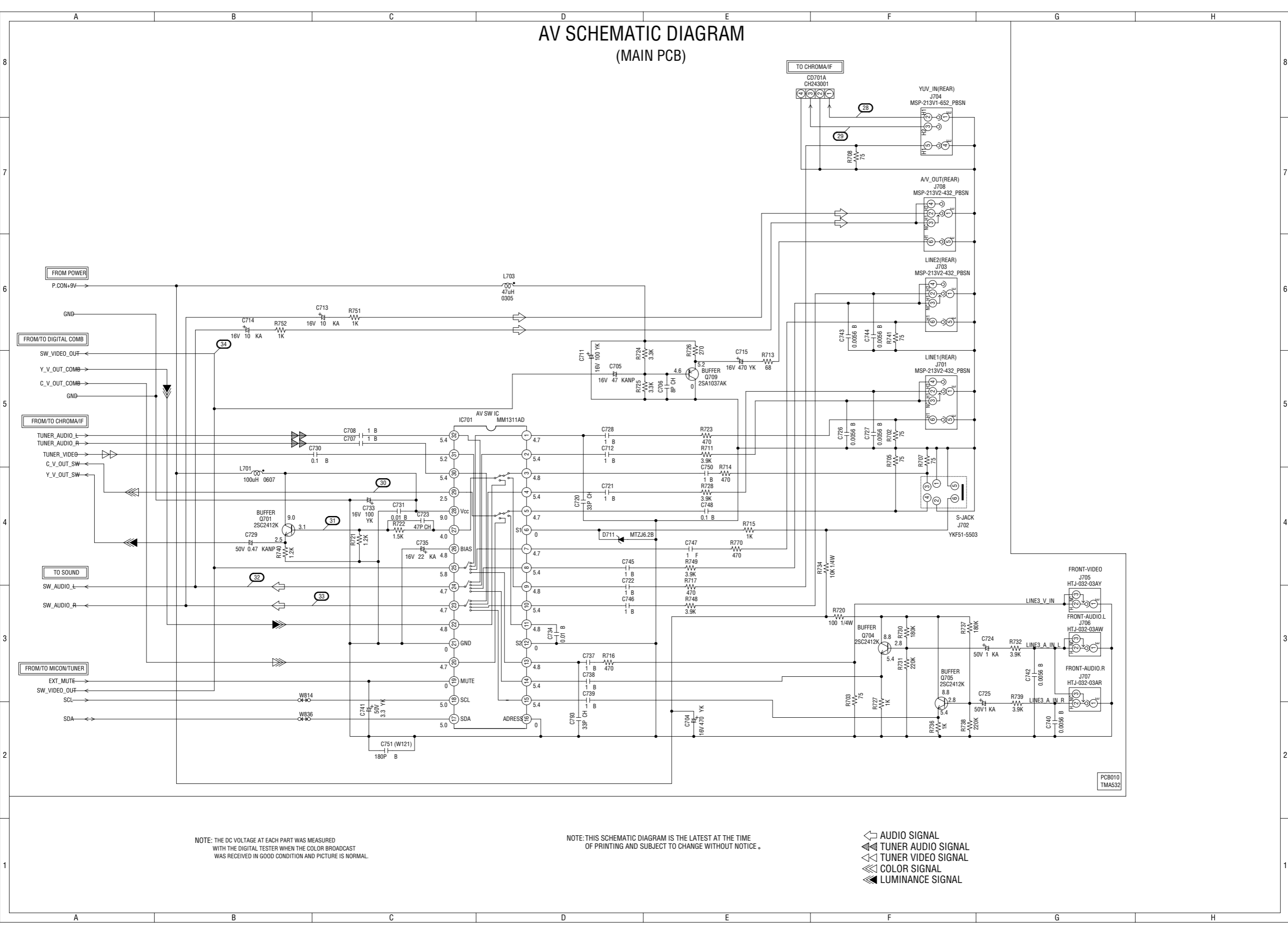
ATTENTION: LES PIÈCES REPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: DIGITAL TRANSISTOR

AUDIO SIGNAL

PCB010
TMA532

AV SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

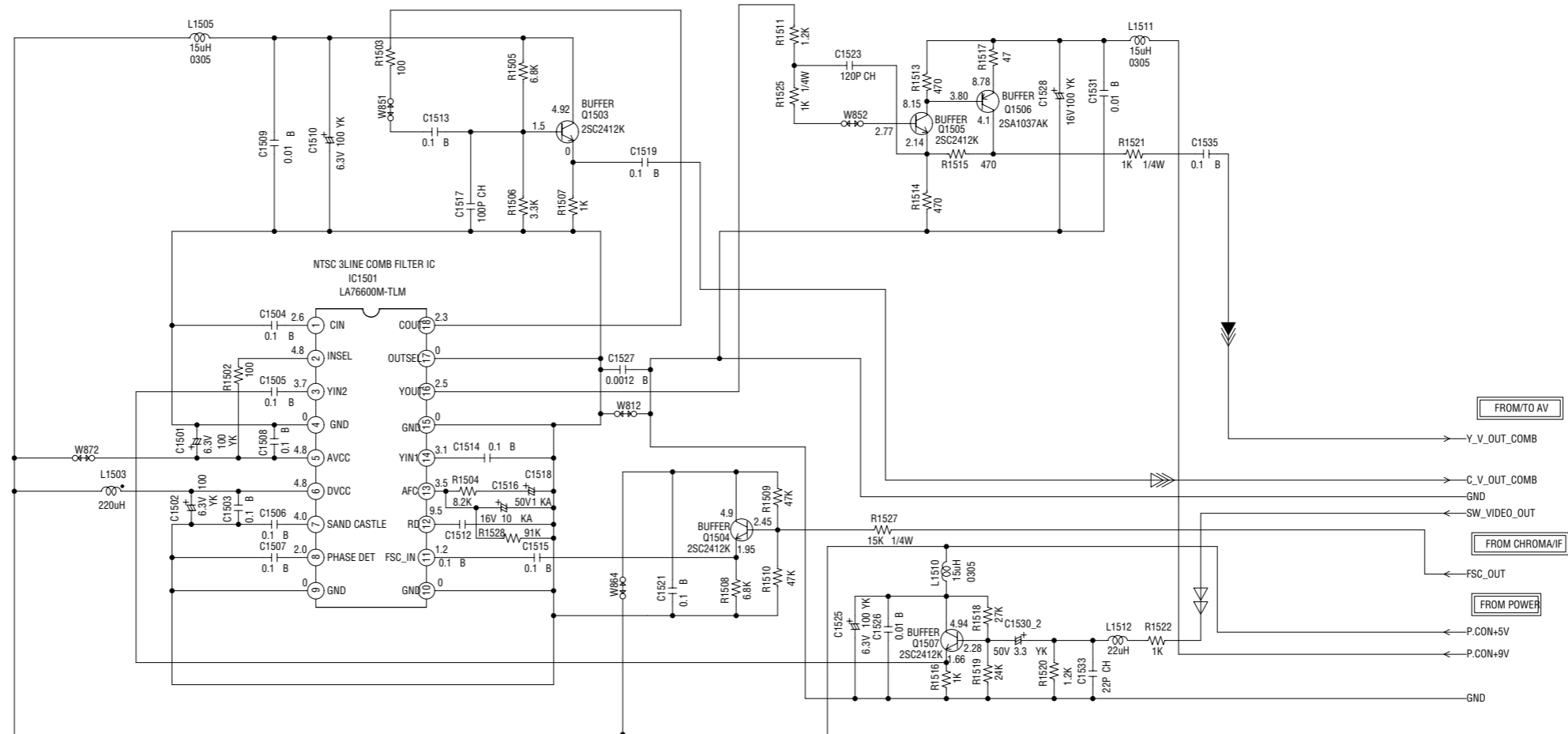
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

- ← AUDIO SIGNAL
- ↔ TUNER AUDIO SIGNAL
- ↔ TUNER VIDEO SIGNAL
- ↔ COLOR SIGNAL
- ↔ LUMINANCE SIGNAL

PC8010
TMA532

DIGITAL COMB/FILTER SCHEMATIC DIAGRAM

(MAIN PCB)



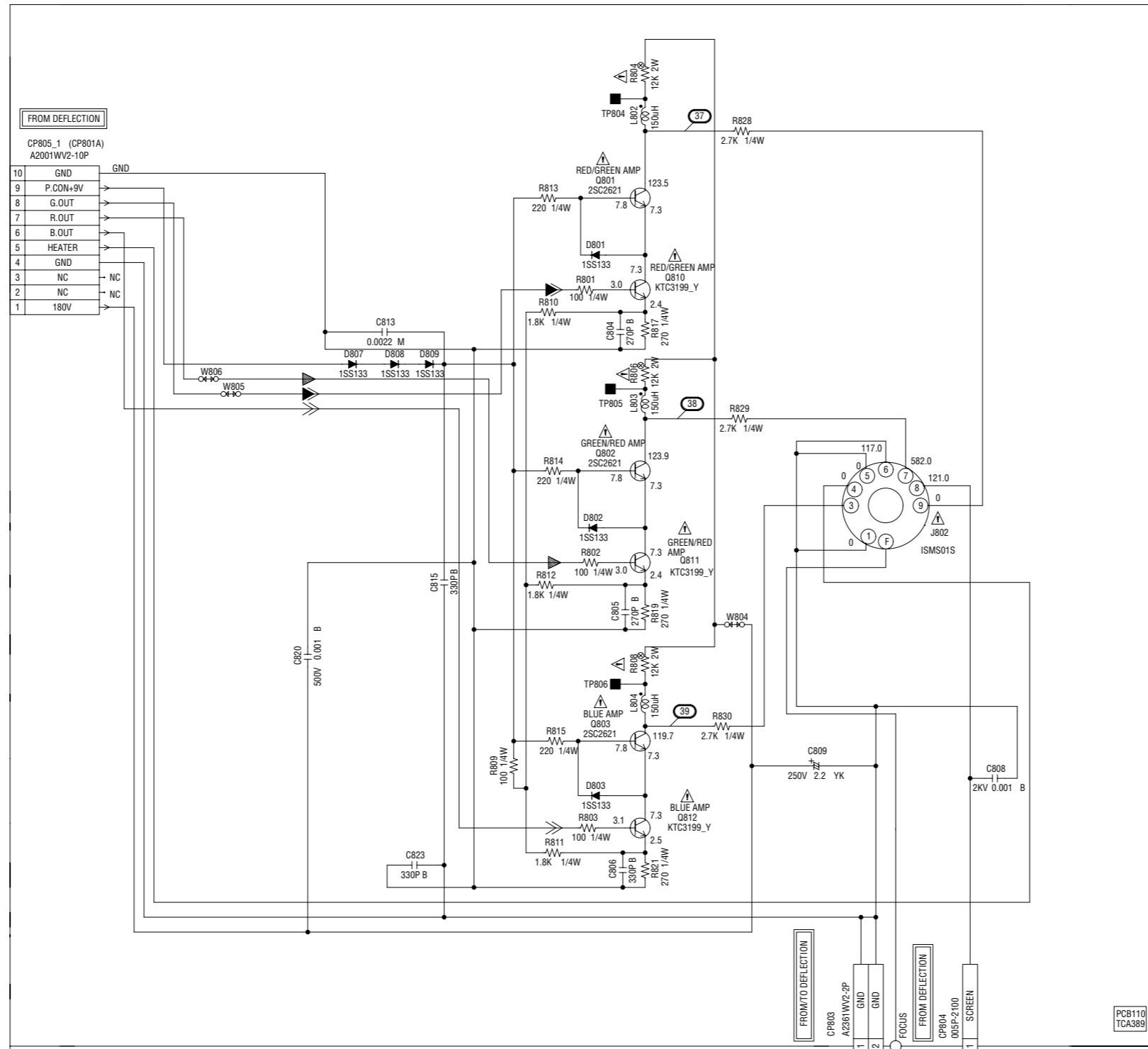
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

- COLOR SIGNAL
- LUMINANCE SIGNAL
- TUNER VIDEO SIGNAL

PCB010
TMA532

CRT SCHEMATIC DIAGRAM (CRT PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

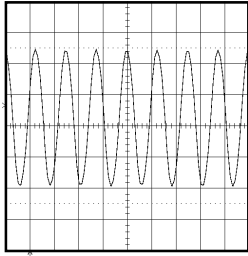
ATTENTION: LES PIÈCES RÉPARÉES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRIRES DANS LA NOMENCLATURE DES PIÈCES.

R.SIGNAL
 G.SIGNAL
 B.SIGNAL

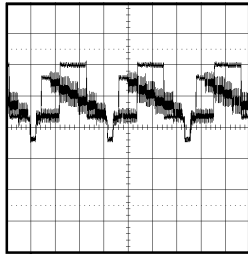
PCB110
TCA389

WAVEFORMS

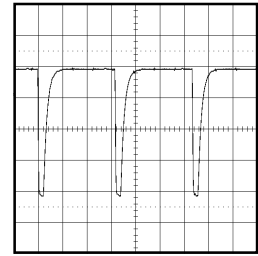
MICON/TUNER



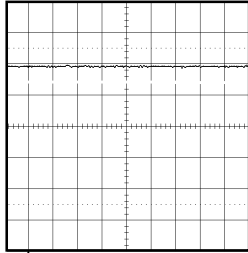
① 1V 0.1 μ s/div



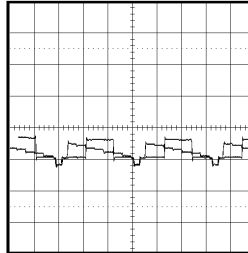
⑥ 1V 20 μ s/div



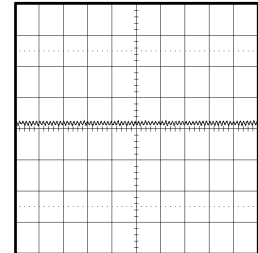
⑪ 0.5V 20 μ s/div



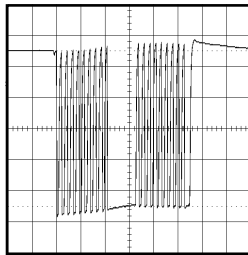
② 1V 1 μ s/div



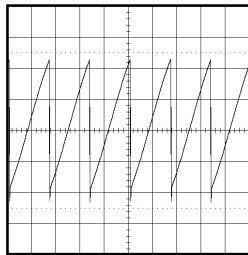
⑦ 1V 20 μ s/div



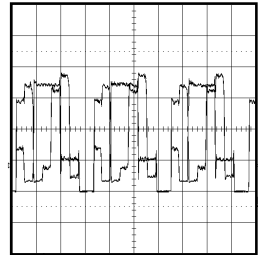
⑫ 1V 2 μ s/div



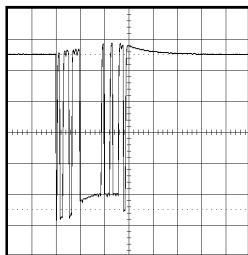
③ 1V 50 μ s/div



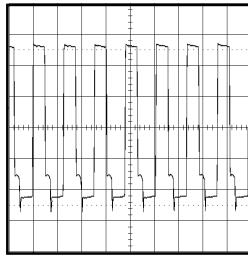
⑧ 0.5V 10ms/div



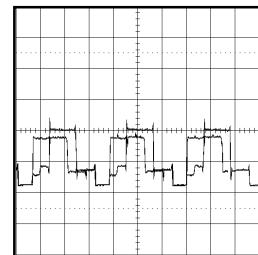
⑬ 1V 20 μ s/div



④ 1V 0.1ms/div

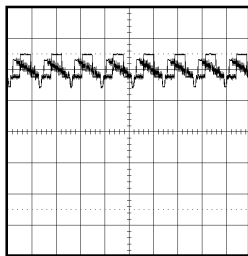


⑨ 1V 50 μ s/div

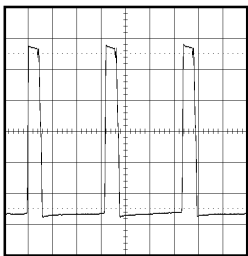


⑭ 2V 20 μ s/div

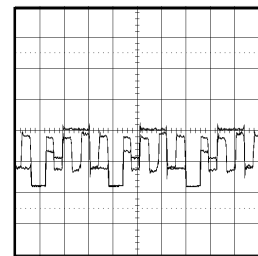
CHROMA/IF



⑤ 1V 50 μ s/div



⑩ 2V 20 μ s/div

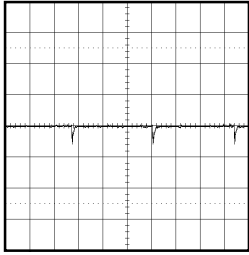


⑮ 2V 20 μ s/div

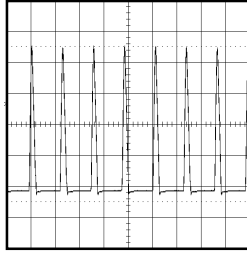
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

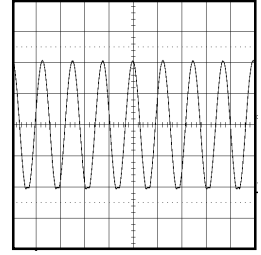
DEFLECTION



⑩ 2V 5ms/div

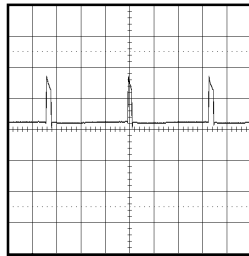


⑪ 200V 50μs/div

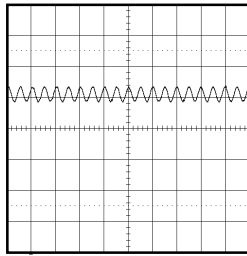


⑫ 5V 2ms/div

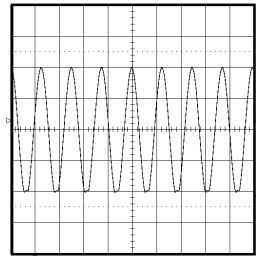
SOUND



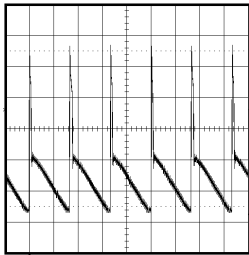
⑬ 20V 5ms/div



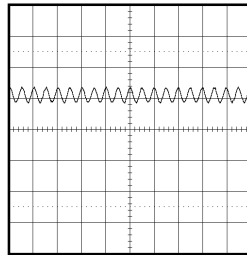
⑭ 2V 5ms/div



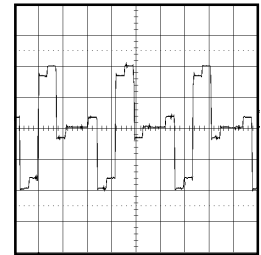
⑮ 5V 2ms/div



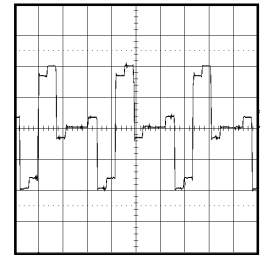
⑯ 10V 10ms/div



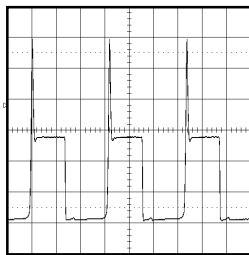
⑰ 2V 5ms/div



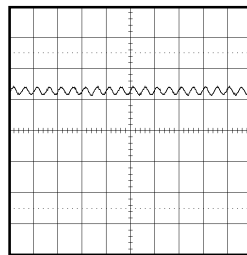
AV



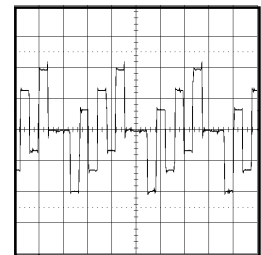
⑱ 200mV 20μs/div



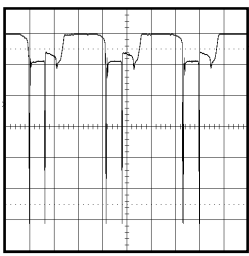
⑲ 20V 20μs/div



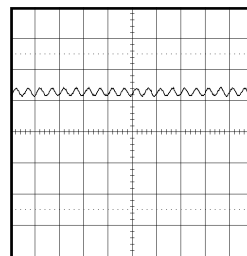
⑲ 2V 5ms/div



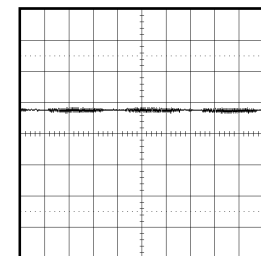
⑳ 200mV 20μs/div



⑳ 2V 20μs/div



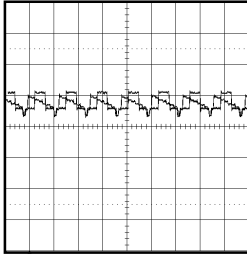
㉑ 2V 5ms/div



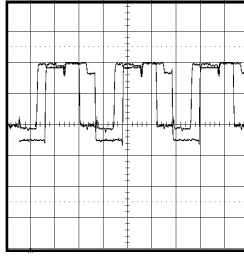
㉒ 2V 20μs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

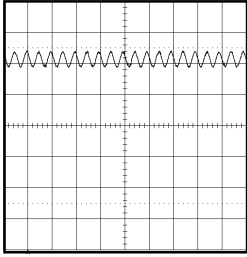
WAVEFORMS



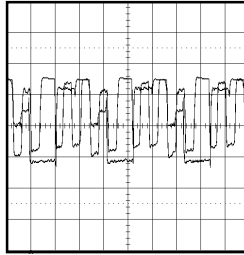
③① 1V 50µs/div



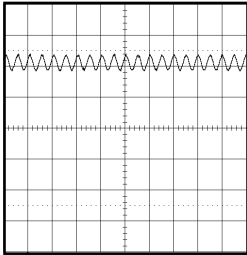
③⑧ 50V 20µs/div



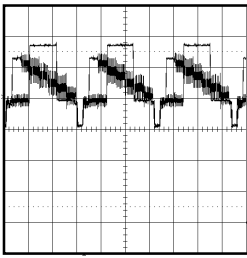
③② 2V 5ms/div



③⑨ 50V 20µs/div

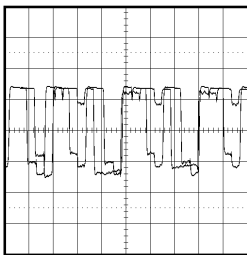


③③ 2V 5ms/div



③④ 0.5V 20µs/div

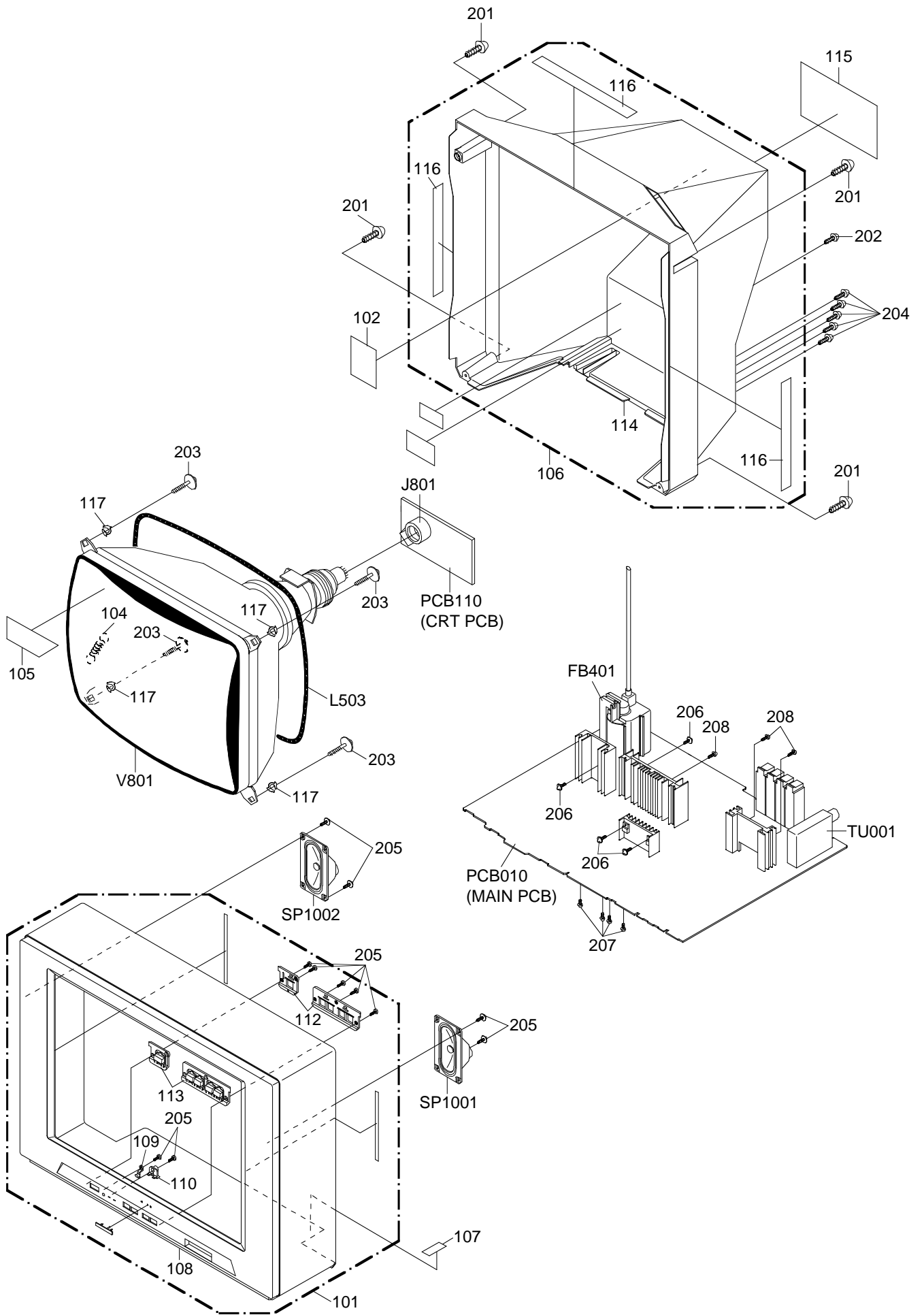
CRT



③⑦ 50V 20µs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AD301153	A3L003J720	CABINET,FRONT ASSY	
102	AD301154	726000A031	SHEET,CRT NO.	
104	BZ710009	741WUA0019	SPRING,EARTH	
105	AD301155	723000B872	FILM,DECORATION	
106	AD301156	A3L003J740	CABINET,BACK ASSY	
107	AD300007	7230006755	SHEET,CAUTION (FOR USA)	
	AD300132	7230006818	SHEET,CAUTION (FOR CANADA)	
108	AD300626	701WPJB281	CABINET,FRONT	
109	AD300627	713WPA0116	GUIDE,REMOCON	
110	AD300628	713WPA0117	GLASS,LED	
112	AD300847	735WPAA367	BUTTON,BASE	
113	AD300848	735WPBA282	BUTTON,FRAME	
114	AD301157	702WPAA215	CABINET,BACK	
115	AD301158	722549A066	SHEET,RATING	
116	AD300134	800WQ00039	FELT SHEET	
117	AD300135	769WSA0011	WASHER CRT T=0.5	
201	BZ710035	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
202	BZ710262	8117540A04	SCREW,TAPPING(B0) TRUSS	4x10
203	BZ710383	8121J50C04	SCREW,TAPPING(B0) GW15	5x30
204	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
205	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
206	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
207	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
208	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
---	AD300634	792WHA0302	PACKAGE,BOTTOM	
---	AD300635	792WHA0303	PACKAGE,TOP	
---	AD301160	793WCDB196	GIFT BOX	
---	AD301161	A3L003J975	INSTRUCTION BOOK KIT (FOR USA)	
---	AD301105	A3L004J975	INSTRUCTION BOOK KIT (FOR CANADA)	
---	AD300022	J3I70417	REGISTRATION CARD (FOR USA ONLY)	
---	AD300023	J3I70436	ESP CARD (FOR USA ONLY)	
---	AD301162	J3L00301	INSTRUCTION BOOK (FOR USA)	
---	AD301106	J3L00401	INSTRUCTION BOOK (FOR CANADA)	
---	AD301213	JA4UD300	POLYBAG,INSTRUCTION(RED CAUTION) (FOR USA)	
---	AD301207	JA4UD100	POLYBAG,INSTRUCTION(RED CAUTION) (FOR CANADA)	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
RESISTORS			
△R001	AD301208	R002T2473J	RC 47K OHM 1/2W
R402	AD301139	R6558A561J	R,FUSE 560 OHM 2W
△R410	AD301140	R3X28A221J	R,METAL OXIDE 220 OHM 2W
△R426	AD301014	R4X5T6472F	R,METAL 4.7K OHM 1/6W
△R436	BZ210105	R4X5T6183F	R,METAL 18K OHM 1/6W
△R438	AD300601	R6358A6R8J	R,FUSE 6.8 OHM 2W
△R439	AD300043	R3X181102J	R,METAL OXIDE 1K OHM 1W
△R441	AD300037	R4X5T6153F	R,METAL 15K OHM 1/6W
△R452	AD301141	R3X181561J	R,METAL OXIDE 560 OHM 1W
△R500	BZ210080	R0G3K2275K	RC 2.7M OHM 1/2W
△R501	AD300720	R5X2AE1R2J	R,CEMENT 1.2 OHM 7W
R502	AD301016	R3X28A331J	R,METAL OXIDE 330 OHM 2W
△R505	BZ210182	R002T4103J	RC 10K OHM 1/4W
R517	BZ210191	R3X28B010J	R,METAL 1 OHM 3W
△R521	AD300041	R3X18A270J	R,METAL OXIDE 27 OHM 2W
△R522	AD300041	R3X18A270J	R,METAL OXIDE 27 OHM 2W
R527	AD301142	R3X18AR82J	R,METAL OXIDE 0.82 OHM 2W
R541	BZ210190	R63581R22J	R,FUSE 0.22 OHM 1W
△R542	AD301143	R3X181R27J	R,METAL OXIDE 0.27 OHM 1W
R543	AD301209	R00104102J	RC 1K OHM 1/4W
R548	BZ210235	R00204103J	RC 10K OHM 1/4W
△R554	AD301018	R002T2104J	RC 100K OHM 1/2W
△R804	BZ210050	R3X18A123J	R,METAL OXIDE 12K OHM 2W
△R806	BZ210050	R3X18A123J	R,METAL OXIDE 12K OHM 2W
△R808	BZ210050	R3X18A123J	R,METAL OXIDE 12K OHM 2W
CAPACITORS			
C115	AD301210	CHG0B04G2J	CC 180 PF 50V B or
	AD301211	CHGTB04G2K	CC 180 PF 50V B or
	AD301212	CHGTCH4G2J	CC 180 PF 50V CH
C118	AD301021	E02LF0222M	CE 2200 UF 6.3V
△C408	BZ110032	E5EZF3102M	CE 1000 UF 25V
C413	AD300067	E02LF4102M	CE 1000 UF 35V
C418	AD301144	P4J7F3274J	CMPP 0.27 UF 250V PMS
C420	AD301145	P4N8FJ113H	CMPP 0.011 UF 1.25KV
C425	BZ110182	C03L0R713K	CC 0.001 UF 2KV R
△C426	AD300061	E5EZF0220M	CE 22 UF 250V
△C430	AD300064	E02LT8220M	CE 22 UF 100V
△C501	AD300067	E02LF4102M	CE 1000 UF 35V
△C502	AD300078	C0JBB0713K	CC 0.001 UF 2KV B
△C503	AD300078	C0JBB0713K	CC 0.001 UF 2KV B
△C505	BZ110145	P2472B104M	CMP 0.1 UF 275V PHE840
△C506	BZ110145	P2472B104M	CMP 0.1 UF 275V PHE840
△C507	AD300607	E51CGC331M	CE 330 UF 200V
△C513	AD301026	CD39E0M13M	CC 0.001 UF 250V
△C514	AD301026	CD39E0M13M	CC 0.001 UF 250V
C517	BZ110182	C03L0R713K	CC 0.001 UF 2KV R
C519	AD301026	CD39E0M13M	CC 0.001 UF 250V
△C521	AD300060	E62NFB101M	CE 100 UF 160V
△C522	AD301026	CD39E0M13M	CC 0.001 UF 250V
△C527	BZ110119	E02LF2222M	CE 2200 UF 16V
△C531	BZ110081	E02LT2471M	CE 470 UF 16V
C535	BZ110172	C03L0R7U2K	CC 680 PF 2KV R
C808	AD300078	C0JBB0713K	CC 0.001 UF 2KV B
C1004	BZ110053	E02LF3102M	CE 1000 UF 25V
C1009	BZ110053	E02LF3102M	CE 1000 UF 25V
DIODES			
D001	AD300729	D97U03301A	DIODE,ZENER MTZJ33A T-77
D102	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D103	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D107	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D108	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D109	BZ410054	0021721150	LED SLR-342VCT32
D201	AD300070	D97U01201B	DIODE,ZENER MTZJ12B T-77
D402	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D403	BZ410019	D97U03001B	DIODE,ZENER MTZJ30B T-77
D404	BZ410023	D97U09R11B	DIODE,ZENER MTZJ9.1B T-77
△D405	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△D406	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
△D407	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
D410	BZ410019	D97U03001B	DIODE,ZENER MTZJ30B T-77
△D411	AD300075	D28TELS6N6	DIODE,RECTIFIER 10EL6N-TA1B2
D414	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D415	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
△D501	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D502	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D503	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC
△D504	BZ410062	D2WTRM11C0	DIODE,SILICON RM11C-EIC

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
DIODES			
△D505	AD300076	D28F30DF60	DIODE,RECTIFIER
△D506	AD300731	D2WXN49370	DIODE,SILICON
D507	BZ410006	D1VT001330	DIODE,SILICON
D509	AD300671	D97U01801B	DIODE,ZENER
△D510	AD300076	D28F30DF60	DIODE,RECTIFIER
D511	AD300731	D2WXN49370	DIODE,SILICON
△D512	BZ410076	D2WXB290S0	DIODE,SILICON
D513	BZ410021	D97U05R61B	DIODE,ZENER
△D514	BZ410076	D2WXB290S0	DIODE,SILICON
D515	AD300070	D97U01201B	DIODE,ZENER
D516	BZ410006	D1VT001330	DIODE,SILICON
D517	BZ410006	D1VT001330	DIODE,SILICON
D519	BZ410006	D1VT001330	DIODE,SILICON
D520	BZ410006	D1VT001330	DIODE,SILICON
D523	AD300671	D97U01801B	DIODE,ZENER
D524	BZ410006	D1VT001330	DIODE,SILICON
D525	BZ410058	D97U08R21B	DIODE,ZENER
D528	BZ410021	D97U05R61B	DIODE,ZENER
D602	BZ410066	D97U06R21B	DIODE,ZENER
D603	BZ410066	D97U06R21B	DIODE,ZENER
D604	BZ410066	D97U06R21B	DIODE,ZENER
D605	BZ410043	D2WT011E10	DIODE,SILICON
D606	BZ410021	D97U05R61B	DIODE,ZENER
D608	BZ410006	D1VT001330	DIODE,SILICON
D611	BZ410006	D1VT001330	DIODE,SILICON
D612	BZ410006	D1VT001330	DIODE,SILICON
D613	BZ410006	D1VT001330	DIODE,SILICON
D614	BZ410006	D1VT001330	DIODE,SILICON
D615	BZ410006	D1VT001330	DIODE,SILICON
D711	BZ410066	D97U06R21B	DIODE,ZENER
D801	BZ410006	D1VT001330	DIODE,SILICON
D802	BZ410006	D1VT001330	DIODE,SILICON
D803	BZ410006	D1VT001330	DIODE,SILICON
D807	BZ410006	D1VT001330	DIODE,SILICON
D808	BZ410006	D1VT001330	DIODE,SILICON
D809	BZ410006	D1VT001330	DIODE,SILICON
ICS			
IC101	AD301027	I56F07074A	IC
IC103	AD300050	I9UJ0T600C	IC
IC198	AD301216	A3J003C015	IC (FOR USA)
	AD301217	A3J004C015	IC (FOR CANADA)
IC201	AD300058	I05DC12530	IC
IC303	BZ611034	I06DF62420	IC
△IC401	BZ611053	I01TD55220	IC
△IC502	BZ611033	I1KA97809A	IC
△IC503	BZ611015	I1KA97805A	IC
IC504	BZ410088	0002E00610	PHOTO COUPLER
IC701	AD300054	I0UD013110	IC
IC902	AD300059	I01FF58290	IC
IC1001	AD300056	I0FSP52760	IC
IC1501	AD301029	I03FE76600	IC
			OEC7074A
			PST600C
			S-24C16AFJA-TB-01
			S-24C16AFJA-TB-01
			TB1253N
			M62420SP
			AN5522
			KIA7809API
			KIA7805API
			LTV-817M-VB
			MM1311AD
			AN5829S
			AN5276
			LA76600M-TLM
TRANSISTORS			
Q101	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q102	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q103	BZ510071	TNAAB05003	COMPOUND TRANSISTOR
Q109	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q201	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q202	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q203	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON
Q204	AD300734	T8AA03881S	TRANSISTOR,SILICON
△Q402	BZ510097	TCAT03227Y	TRANSISTOR,SILICON
△Q405	BZ510040	TDUU024990	TRANSISTOR,SILICON
Q406	BZ510049	TPYJD05001	COMPOUND TRANSISTOR
Q407	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
△Q501	BZ510070	TCAT032034	TRANSISTOR,SILICON
△Q502	BZ510098	T220033260	FET
Q503	BZ510005	TA3T1371A0	TRANSISTOR,SILICON
Q504	BZ510069	TCATC31980	TRANSISTOR,SILICON
Q505	BZ510011	TC3T029090	TRANSISTOR,SILICON
Q506	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON
△Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON
△Q508	AD300611	TAAT01273Y	TRANSISTOR,SILICON
Q509	BZ510071	TNAAB05003	COMPOUND TRANSISTOR
△Q510	BZ510043	TC10013840	TRANSISTOR,SILICON
Q512	BZ510004	TA3T016240	TRANSISTOR,SILICON
Q514	BZ510070	TCAT032034	TRANSISTOR,SILICON
Q601	BZ510090	TPAAB05001	COMPOUND TRANSISTOR
			2SC2412KT146 R,S
			2SC2412KT146 R,S
			KRC102SRTK
			2SC2412KT146 R,S
			2SC2412KT146 R,S
			2SC2412KT146 R,S
			2SA1037AKT146R,S
			KTC3881S-RTK
			KTC3227_Y-AT
			2SD2499(LB0EC1)
			DTA144EKAT146
			2SC2412KT146 R,S
			KTC3203_Y-AT
			2SK3326(2)
			2SA1371(D,E)-AE
			KTC3198-AT(Y,GR)
			2SC2909(S,T)-AA
			2SA1037AKT146R,S
			KTC3198-AT(Y,GR)
			KTA1273_Y
			KRC102SRTK
			2SC13840W
			2SA1624-AA
			KTC3203_Y-AT
			KRA102SRTK

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
TRANSISTORS			
Q603	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q604	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q701	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q704	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q705	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q709	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
△Q801	BZ510027	TC3Q026210	TRANSISTOR,SILICON 2SC2621(D,E)-RAC
△Q802	BZ510027	TC3Q026210	TRANSISTOR,SILICON 2SC2621(D,E)-RAC
△Q803	BZ510027	TC3Q026210	TRANSISTOR,SILICON 2SC2621(D,E)-RAC
△Q810	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
△Q811	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
△Q812	AD301032	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT
Q1001	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR KRC111SRTK
Q1503	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q1504	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q1505	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q1506	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
Q1507	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
COILS & TRANSFORMERS			
L002	BZ310002	021673101K	COIL 100 UH
L201	BZ310041	02167F101J	COIL 100 UH
L203	BZ310107	021LA61R5K	COIL 1.5 UH
L204	BZ310043	021LA6150K	COIL 15 UH
L205	BZ310003	021673470K	COIL 47 UH
L301	BZ310029	021LA6470K	COIL 47 UH
L302	BZ310058	021LA6220K	COIL 22 UH
L401	BZ310004	021679472K	COIL 4.7 MH
L402	BZ310013	0221000013	COIL,LINEARITY ELH5L4112N
△L501	AD300119	029T000097	COIL,LINE FILTER 1R5A123F28Y
△L503	BZ310116	028R140023	COIL,DEGAUSS 8R140023
L601	BZ310003	021673470K	COIL 47 UH
L602	BZ310002	021673101K	COIL 100 UH
L603	BZ310040	02167F470J	COIL 47 UH
L604	BZ310040	02167F470J	COIL 47 UH
L701	BZ310005	02167D101K	COIL 100 UH
L703	BZ310040	02167F470J	COIL 47 UH
L802	AD300123	021673151K	COIL 150 UH
L803	AD300123	021673151K	COIL 150 UH
L804	AD300123	021673151K	COIL 150 UH
L901	BZ310058	021LA6220K	COIL 22 UH
L1503	BZ310113	021673221K	COIL 220 UH
L1505	AD300613	02167F150J	COIL 15 UH
L1510	AD300613	02167F150J	COIL 15 UH
L1511	AD300613	02167F150J	COIL 15 UH
L1512	AD301033	021LA6220J	COIL 22 UH
T401	BZ310157	045009003J	TRANS,HORIZONTAL DRIVE ETH09K14BZ
△T501	AD301146	0481290914	TRANSFORMER,SWITCHING 81290914
JACKS			
J701	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
J702	AD300108	063Q700002	JACK YKF51-5503
J703	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
J704	AD301037	060J411024	RCA JACK MSP-213V1-652 PBSN
J705	AD300110	060G401047	RCA JACK HTJ-032-03AY
J706	AD300111	060G401046	RCA JACK HTJ-032-03AW
J707	AD300112	060G401039	RCA JACK HTJ-032-03AR
J708	AD301038	060J431019	RCA JACK MSP-213V2-432 PBSN
△J802	AD301147	066F120018	SOCKET,CATHODE RAY TUBE ISMS01S
△J1001	BZ614361	060J131015	HEADPHONE JACK MSJ-2000
SWITCHES			
SW101	BZ612001	0504201T31	SWITCH,TACT SKHVBED010
SW102	BZ612001	0504201T31	SWITCH,TACT SKHVBED010
SW103	BZ612001	0504201T31	SWITCH,TACT SKHVBED010
SW104	BZ612001	0504201T31	SWITCH,TACT SKHVBED010
SW105	BZ612001	0504201T31	SWITCH,TACT SKHVBED010
VARIABLE RESISTORS			
VR502	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED EVNCYAA03BE4
P.C.BOARD ASSEMBLIES			
PCB010	AD301148	A3L003J010	PCB ASS'Y (FOR USA) TMA532A
	AD301100	A3L004J010	PCB ASS'Y (FOR CANADA) TMA532A
PCB110	AD301149	A3L003J110	PCB ASS'Y TCA389A
MISCELLANEOUS			
B401	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
B402	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
B501	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
B502	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
B504	BZ310121	024HT03553	CORE,BEADS W5RH3.5X5X1.0
CD501	AD300746	120R615901	CORD,AC BUSH 0R615901

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description
MISCELLANEOUS			
CD801	AD301150	06CU2A2601	CORD,CONNECTOR
CD803	BZ614122	06CP82035A	CORD,CONNECTOR
CF201	BZ613015	1011T4R504	FILTER,CERAMIC
CF202	AD301044	1022045R74	FILTER,SAW
CF203	AD300686	1012T4R519	FILTER,CERAMIC TRAP
CF204	AD300513	1012T04702	FILTER,CERAMIC TRAP
CP101	BZ614102	0694270139	CONNECTOR PCB SIDE
△CP401	AD300095	069X460029	CONNECTOR PCB SIDE
CP501	BZ614176	069S320419	CONNECTOR PCB SIDE
△CP502	AD300687	069S420110	CONNECTOR PCB SIDE
CP507	BZ614016	069W01001A	CONNECTOR PCB SIDE
CP508	BZ614016	069W01001A	CONNECTOR PCB SIDE
CP803	BZ614269	069S320010	CONNECTOR PCB SIDE
CP804	BZ614058	069W010010	CONNECTOR PCB SIDE
CP805	BZ614213	069S2A0629	CONNECTOR PCB SIDE
CD1001	AD300093	06CU14411A	CORD,CONNECTOR
CD701A	AD300622	06CH243001	CORD,CONNECTOR
CP1001	AD301045	069S140419	CONNECTOR PCB SIDE
CP801A	BZ614273	067U010049	WIRE HOLDER
EL001	BZ614044	124120301A	EYE LET
EL002	BZ614043	124116281A	EYE LET
△F501	AD301046	081PC6R305	FUSE
△FB401	AD301151	043214035F	TRANSFORMER,FLYBACK
FH501	BZ614005	06710T0006	HOLDER,FUSE
FH502	BZ614005	06710T0006	HOLDER,FUSE
OS101	AD301048	0773071001	REMOTE RECEIVER
△RY501	AD300114	0560V20115	RELAY
SP1001	BZ614029	070C533008	SPEAKER
SP1002	BZ614029	070C533008	SPEAKER
△TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT
TM101	AD301051	07660DU01B	TRANSMITTER
TU001	BZ310341	0145K00056	TUNER,VHF-UHF
△V801	AD301152	098Q150403	CRT W/DY
X101	AD300624	1001T8R004	CERAMIC,OSCILLATOR
X601	BZ613004	100CT3R505	CRYSTAL
RESISTOR			
	RC.....	CARBON RESISTOR	
CAPACITORS			
	CC.....	CERAMIC CAPACITOR	
	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
	CP.....	POLYESTER CAPACITOR	
	CPP.....	POLYPROPYLENE CAPACITOR	
	CPL.....	PLASTIC CAPACITOR	
	CMP.....	METAL POLYESTER CAPACITOR	
	CMPL.....	METAL PLASTIC CAPACITOR	
	CMPP.....	METAL POLYPROPYLENE CAPACITOR	

TOSHIBA CORPORATION

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